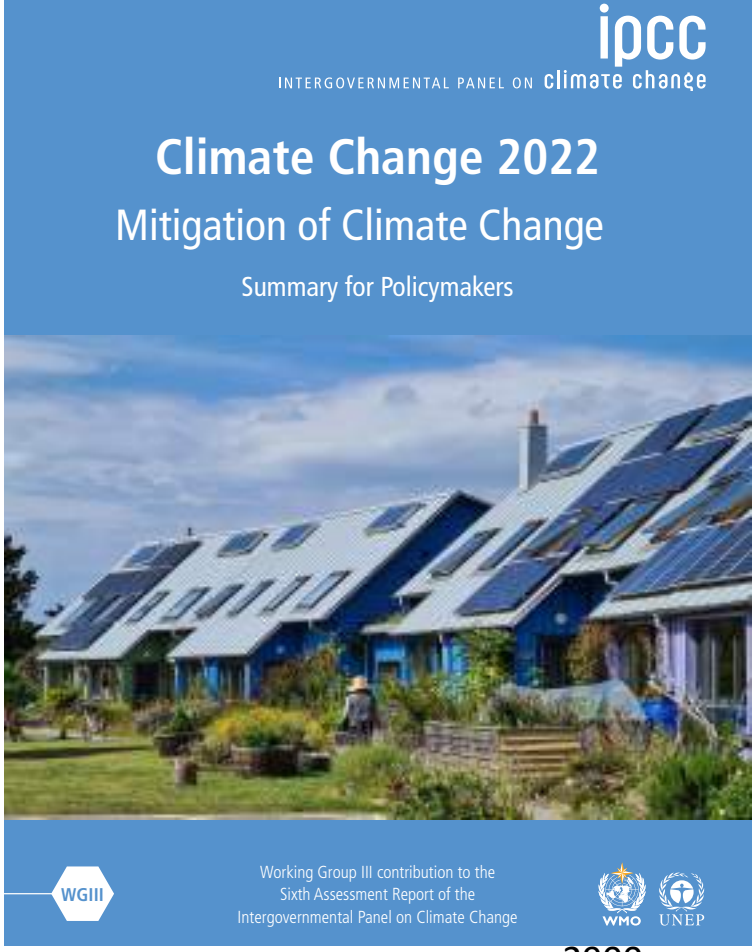
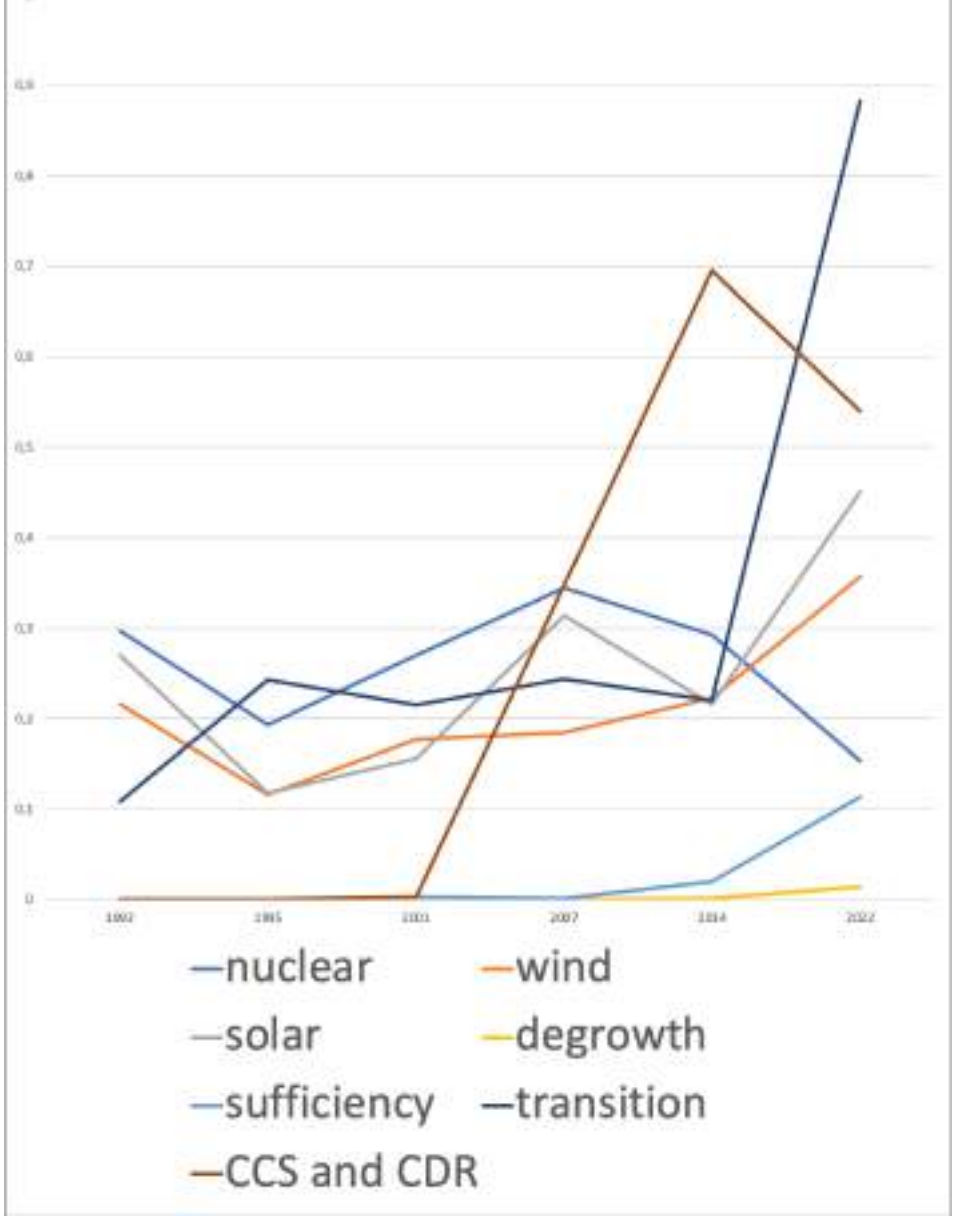
English publication

More, more and more. An All-Consuming History of Energy, Penguin, Octobre 2024

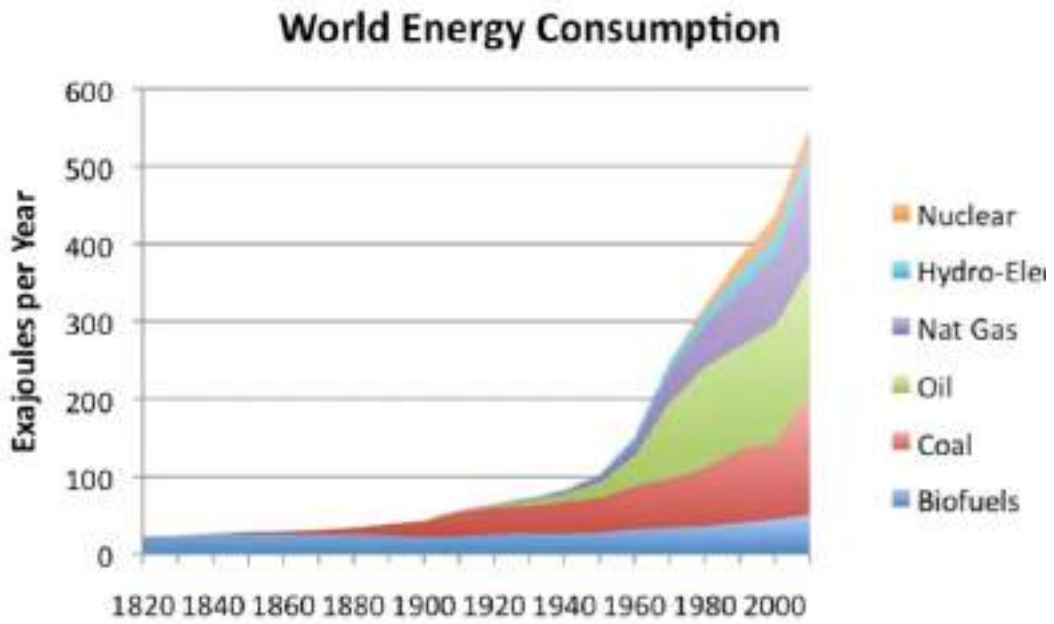


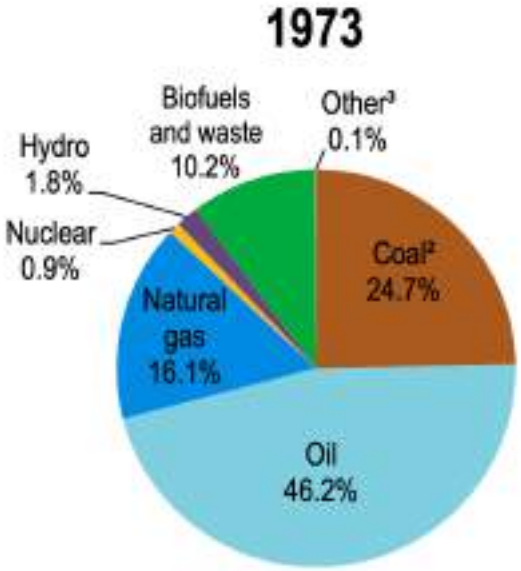


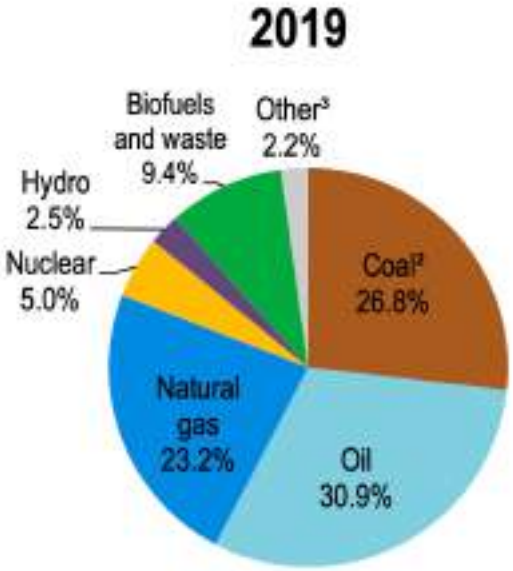
- 2900 pages
- Transition : 2517 occurrences
- Transitions : 1890
- Sufficiency : 188
- Degrowth : 26 occurrences
- 3131 scénarios, « scenarios that include economic degrowth are not fully represented, as these scenarios, were not submitted to the database »

« Energy transitions can occur faster than in the past »

« A Low-Carbon Energy Transition Needs to Occur Faster Than Previous Transitions » (p. 369).

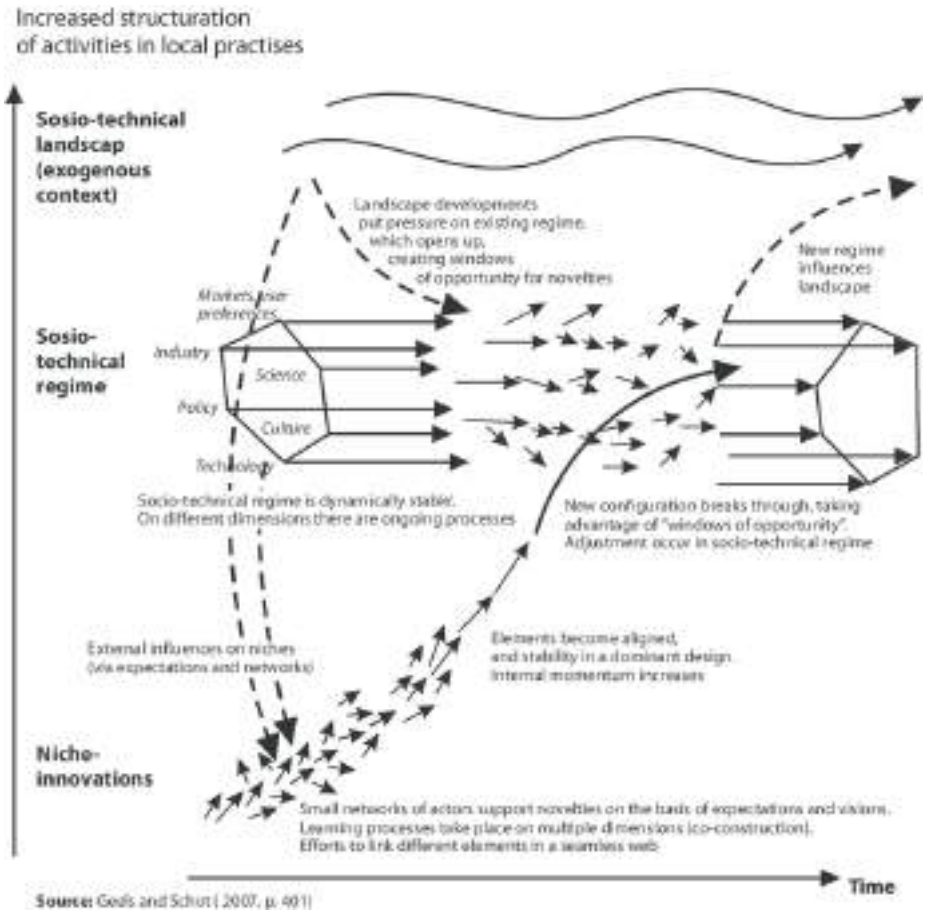

World Energy Consumption
Exajoules per Year
600
500
400
300
200
100
0
1820 1840 1860 1880 1900 1920 1940 1960 1980 2000
Nuclear
Hydro-Ele
Nat Gas
Oil
Coal
Biofuels

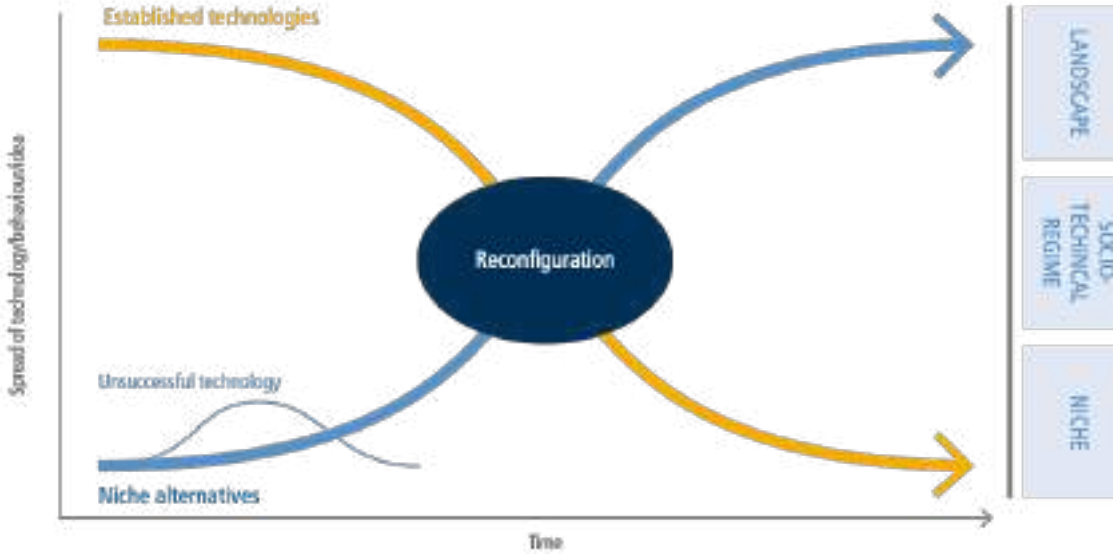

1973
Biofuels and waste 10.2%
Other³ 0.1%
Hydro 1.8%
Nuclear 0.9%
Coal² 24.7%
Natural gas 16.1%
Oil 46.2%


2019
Biofuels and waste 9.4%
Other³ 2.2%
Hydro 2.5%
Nuclear 5.0%
Coal² 26.8%
Natural gas 23.2%
Oil 30.9%

254 EJ

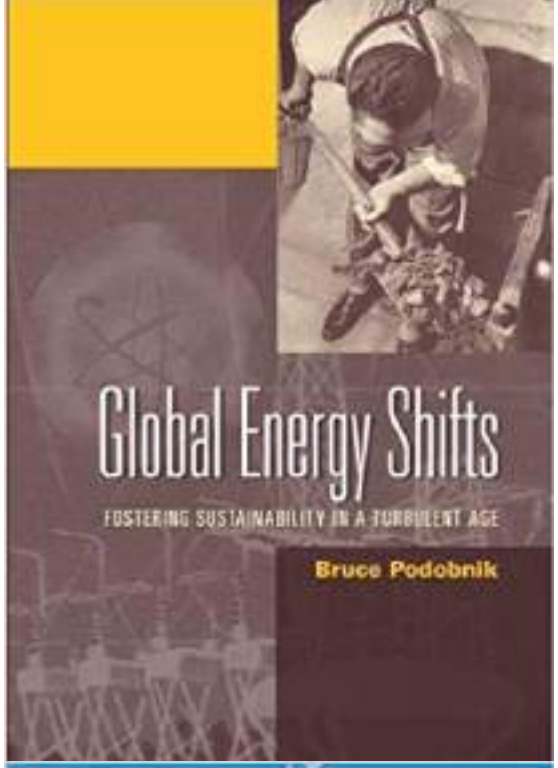
606 EJ

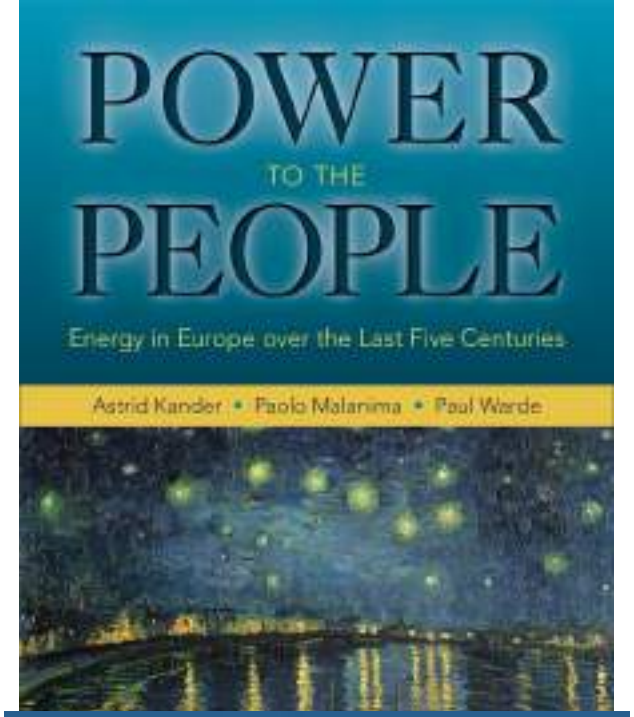


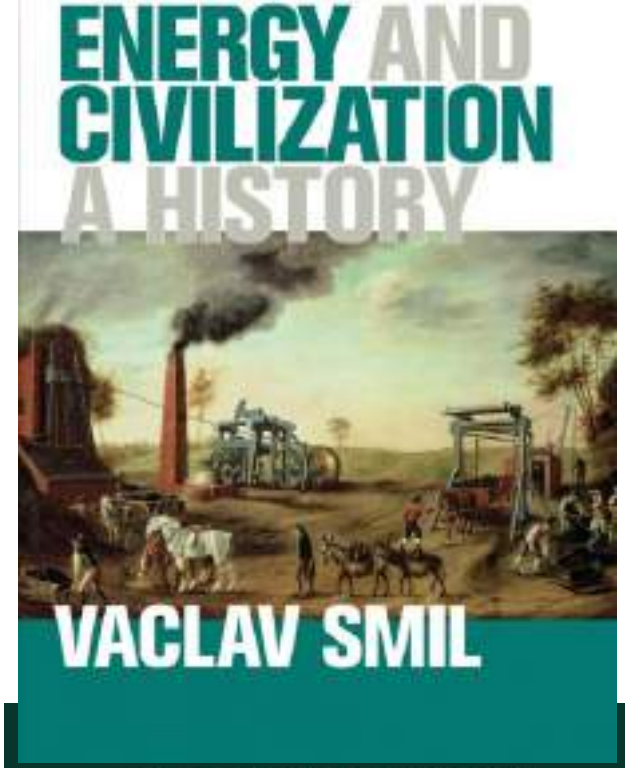


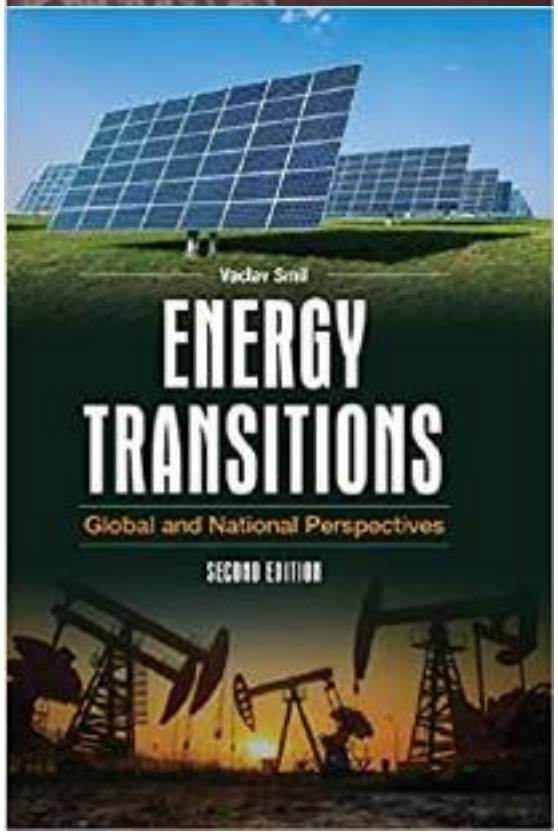
« Energy transitions can occur faster than in the past »

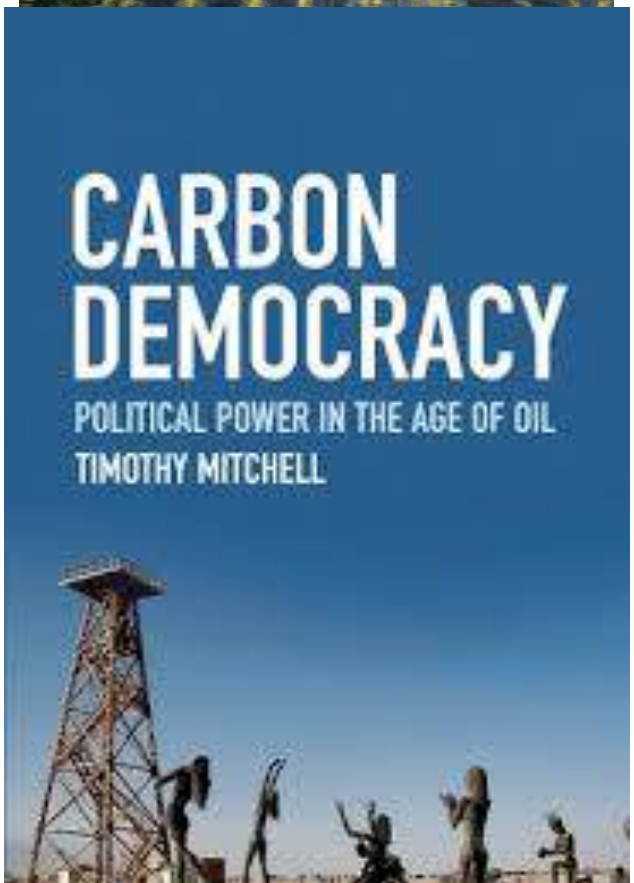
« A Low-Carbon Energy Transition Needs to Occur Faster Than Previous Transitions » IPCC report, 2022, p. 369

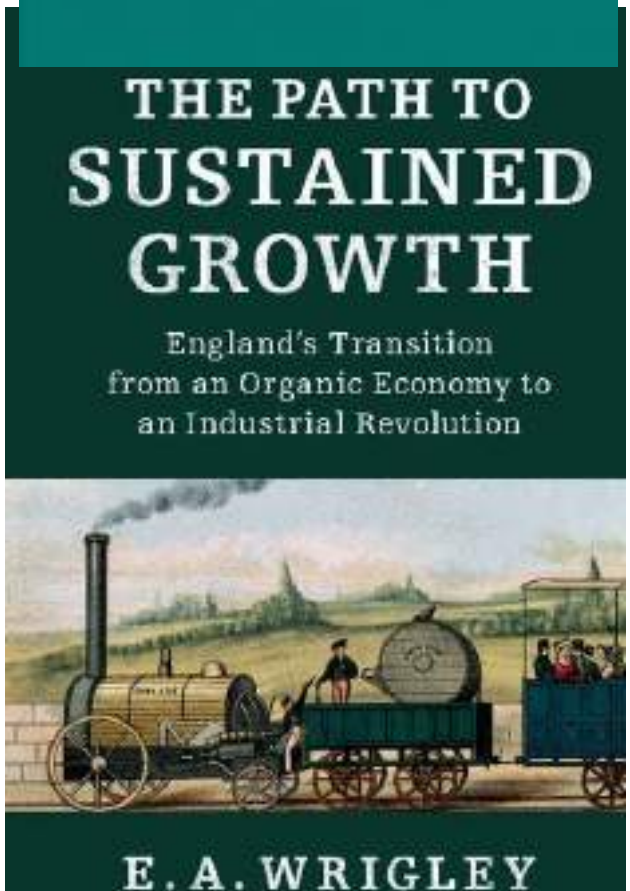

Global Energy Shifts
FOSTERING SUSTAINABILITY IN A TURBULENT AGE
Bruce Podobnik

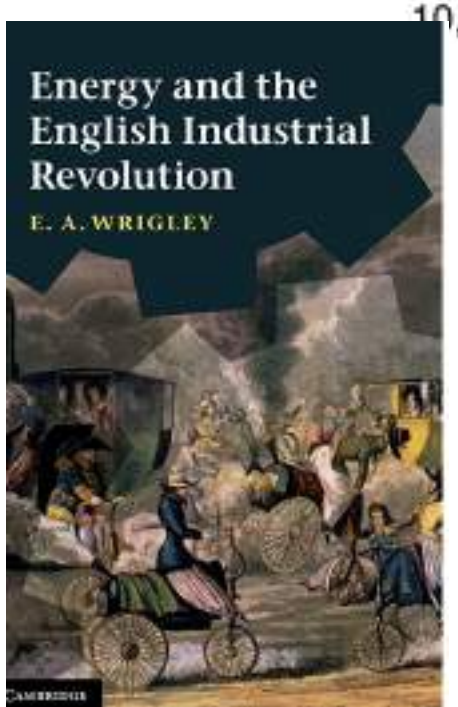

POWER
TO THE
PEOPLE
Energy in Europe over the Last Five Centuries
Astrid Kander • Paolo Malanima • Paul Warde


ENERGY AND
CIVILIZATION
A HISTORY
VACLAV SMIL


Vaclav Smil
ENERGY
TRANSITIONS
Global and National Perspectives
SECOND EDITION


CARBON
DEMOCRACY
POLITICAL POWER IN THE AGE OF OIL
TIMOTHY MITCHELL


THE PATH TO
SUSTAINED
GROWTH
England's Transition
from an Organic Economy to
an Industrial Revolution
E. A. WRIGLEY



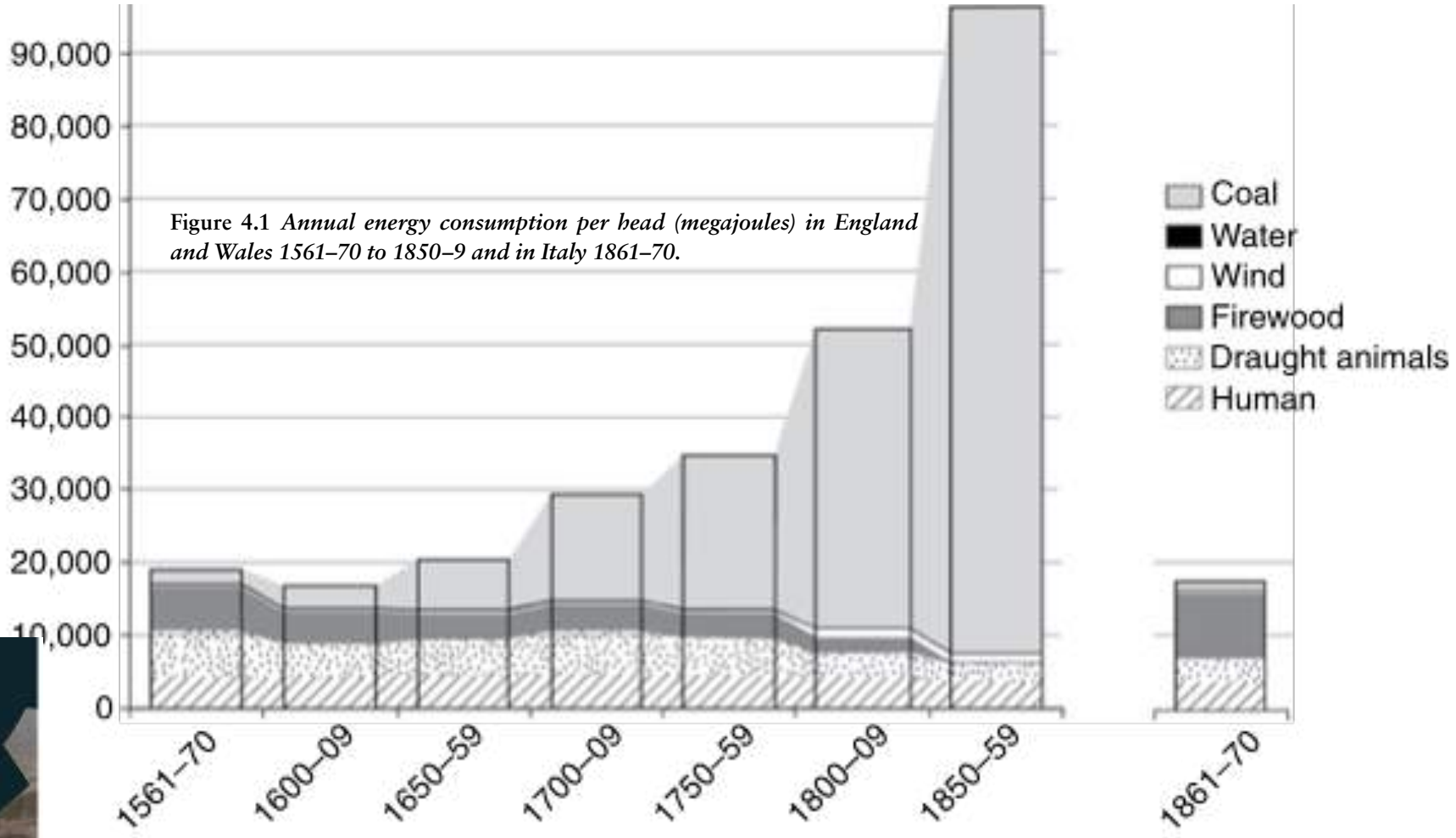


Figure 4.1 *Annual energy consumption per head (megajoules) in England and Wales 1561–70 to 1850–9 and in Italy 1861–70.*

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


gettyimages
Fox Photos
3422473

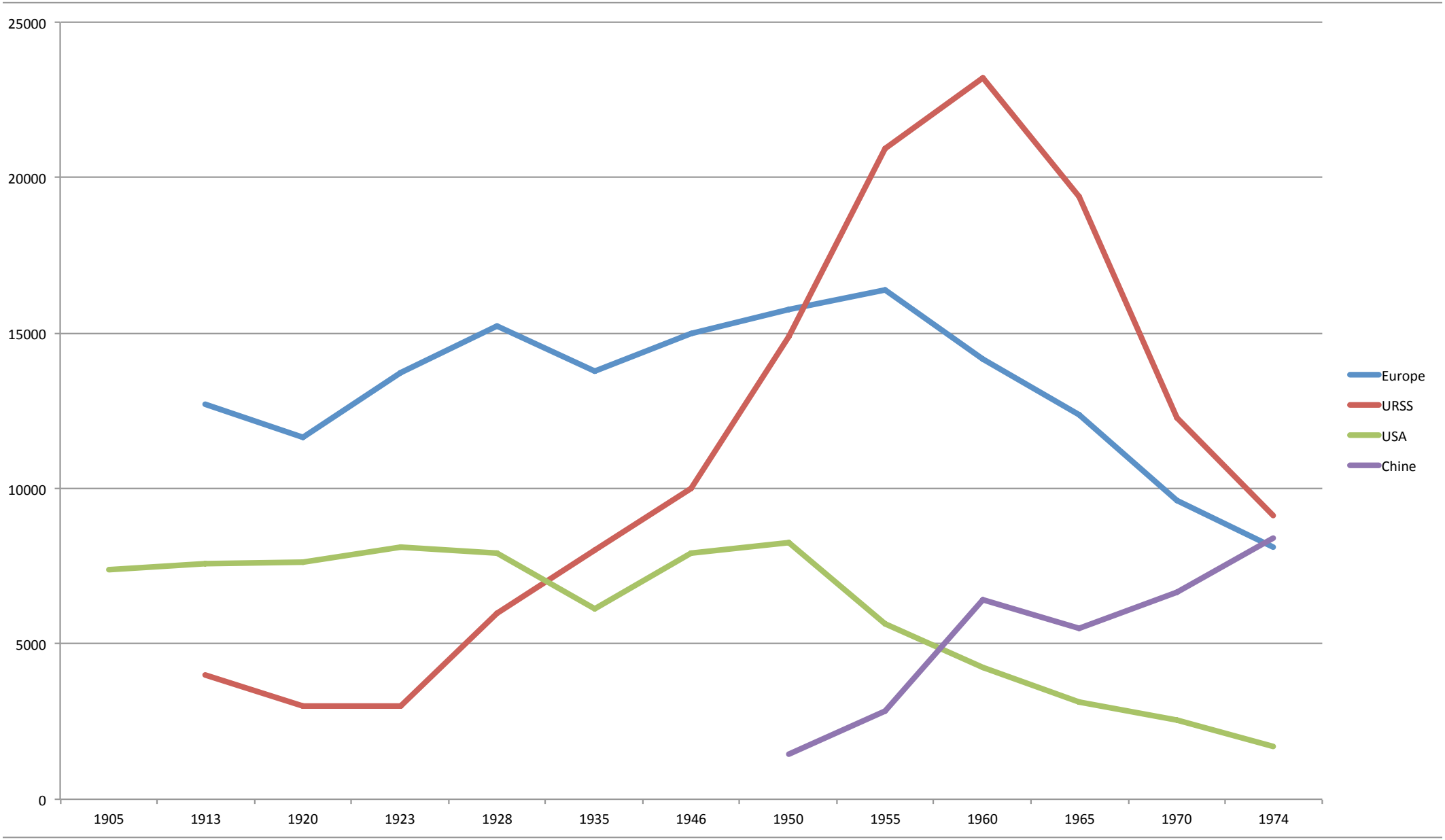
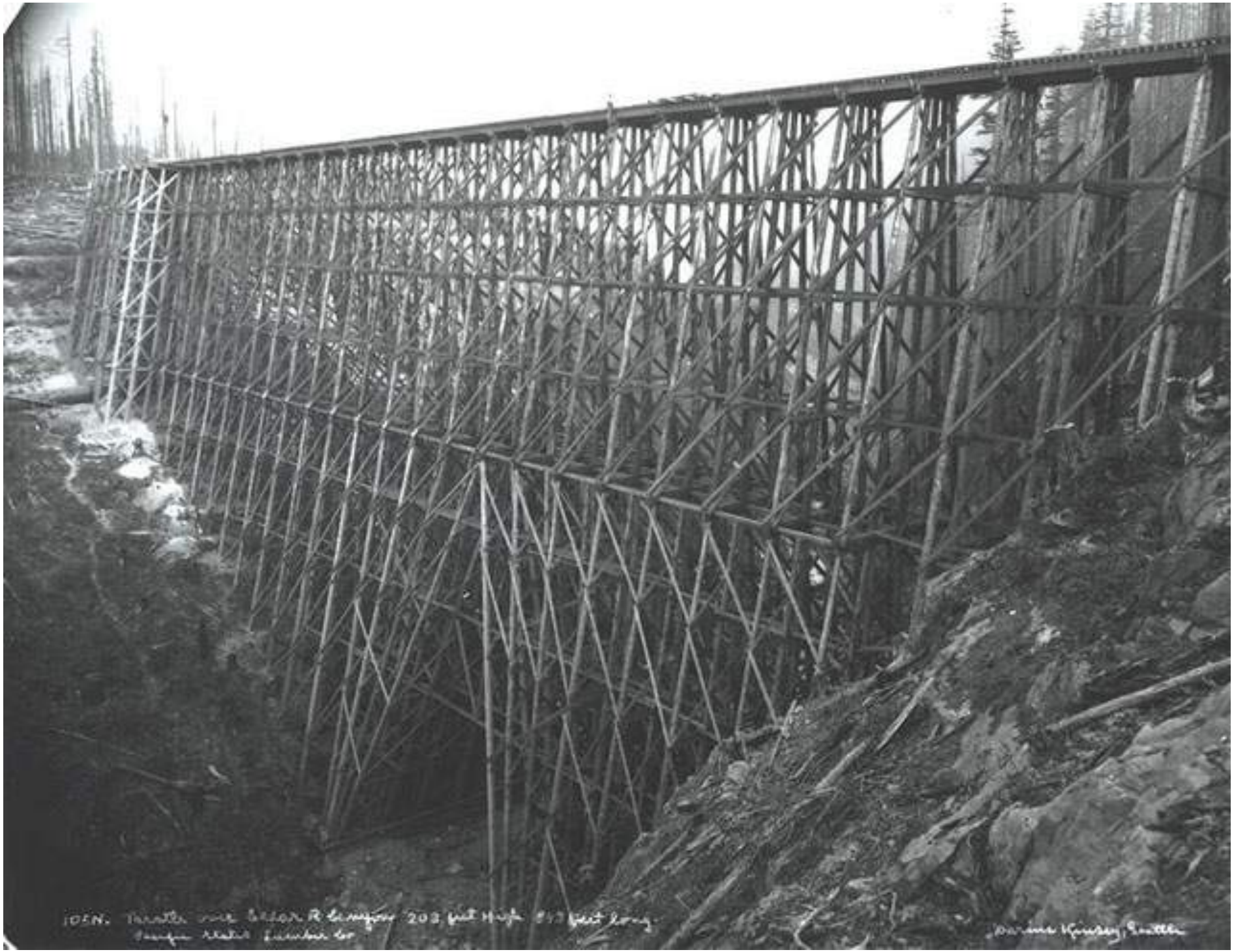
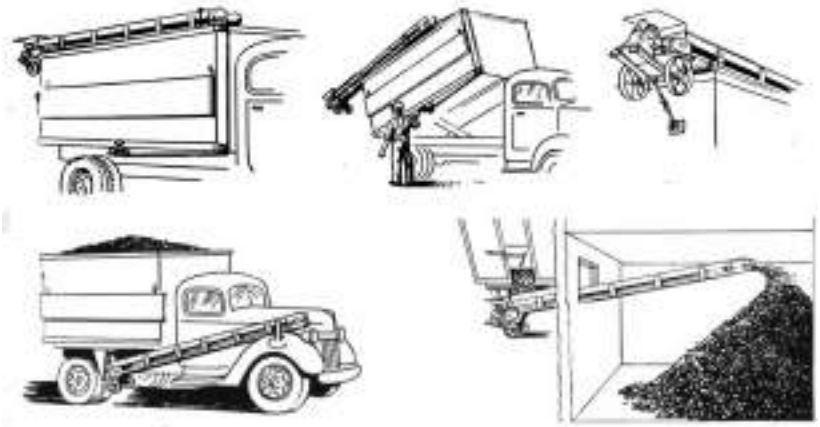


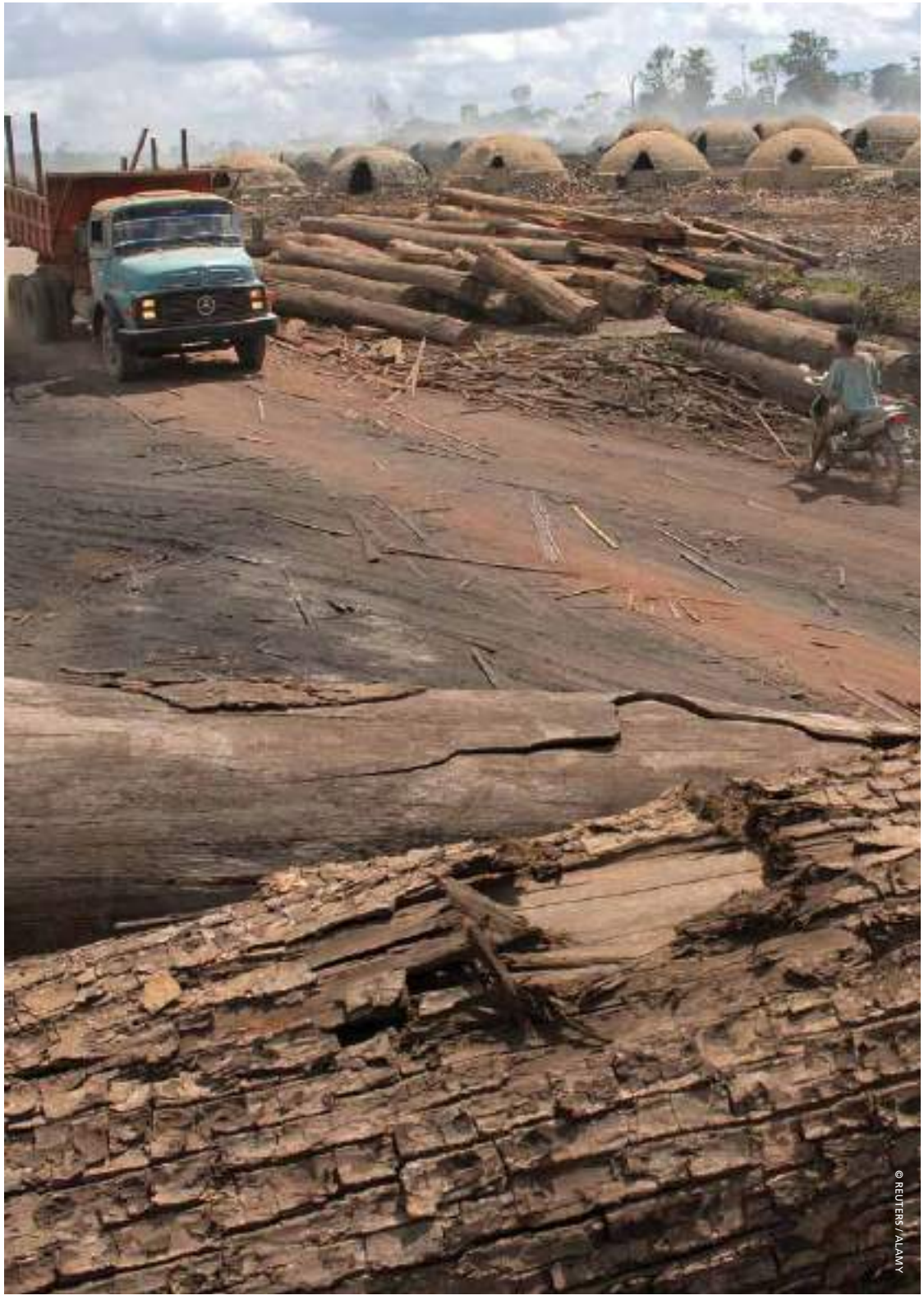
Figure 1. Consommation de bois de mines en milliers de mètres-cubes.
Sources : FAO, *European Timber Statistics*, 1913-1950, Genève 1953 ; FAO, Forest Products Statistics, Part II Apparent Consumption, 1950-1975, Rome, 1975 ; J.J. MacGregor, « Timber Statistics », *Journal of the Royal Statistical Society,* 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.

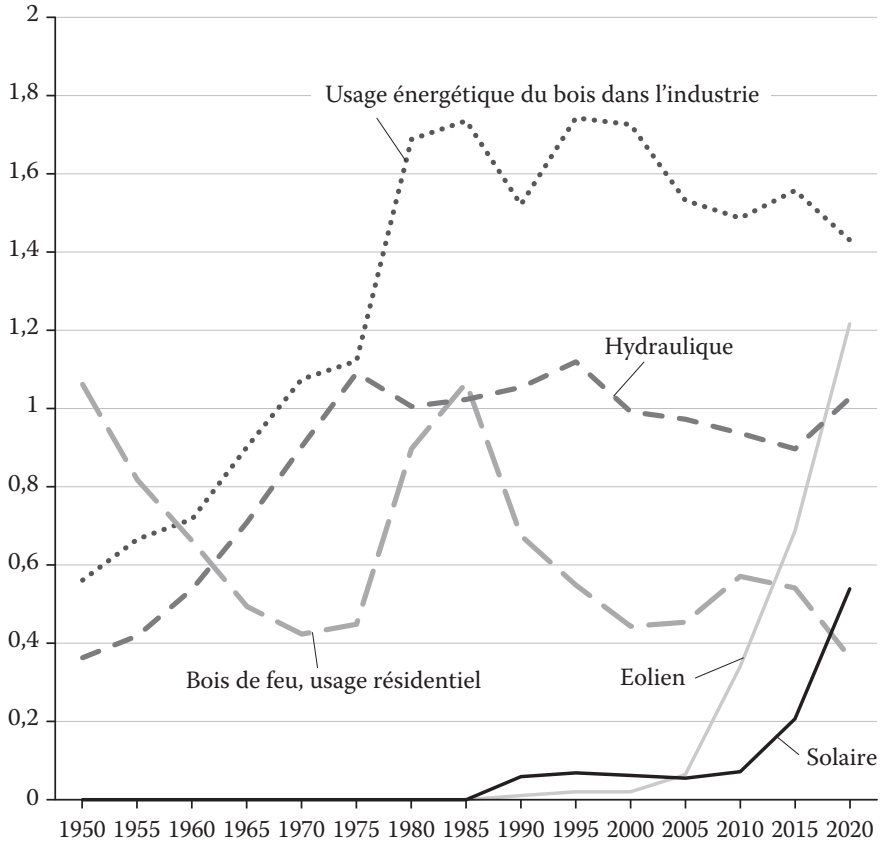




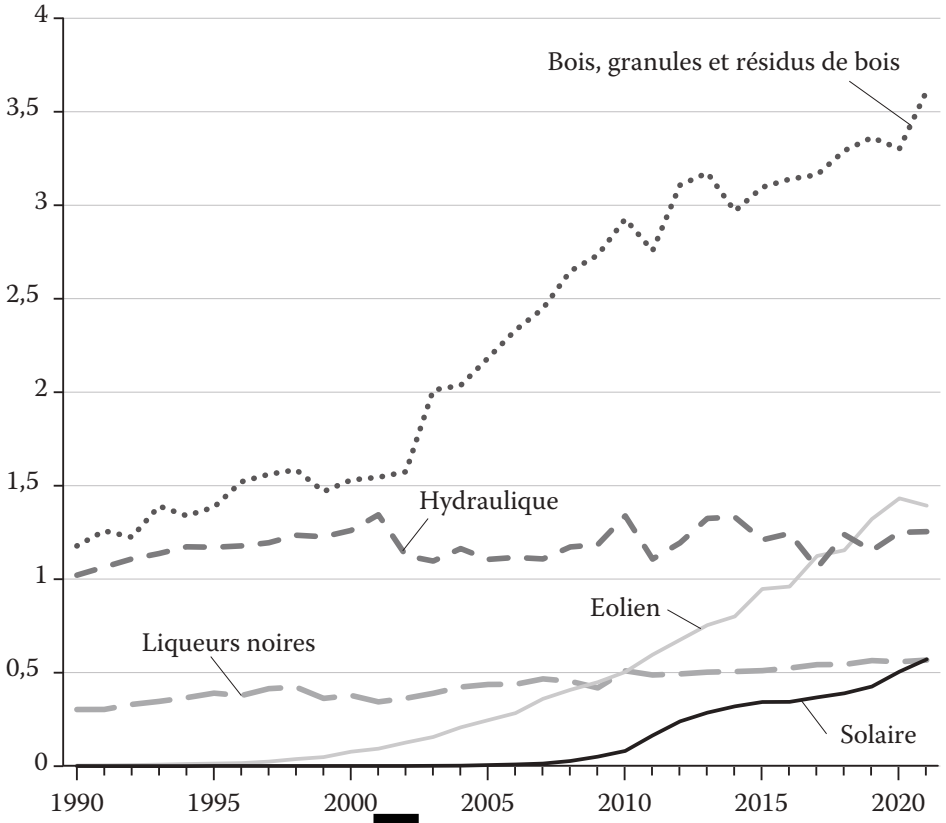

MASSACHUSETTS SHARE COAL CO


Interstate Cooperage Co., Belhaven, N. C.





Etats-Unis



Europe

Énergies renouvelables en millions de térajoules (énergie primaire).


JCB

Transition énergétique : une généalogie

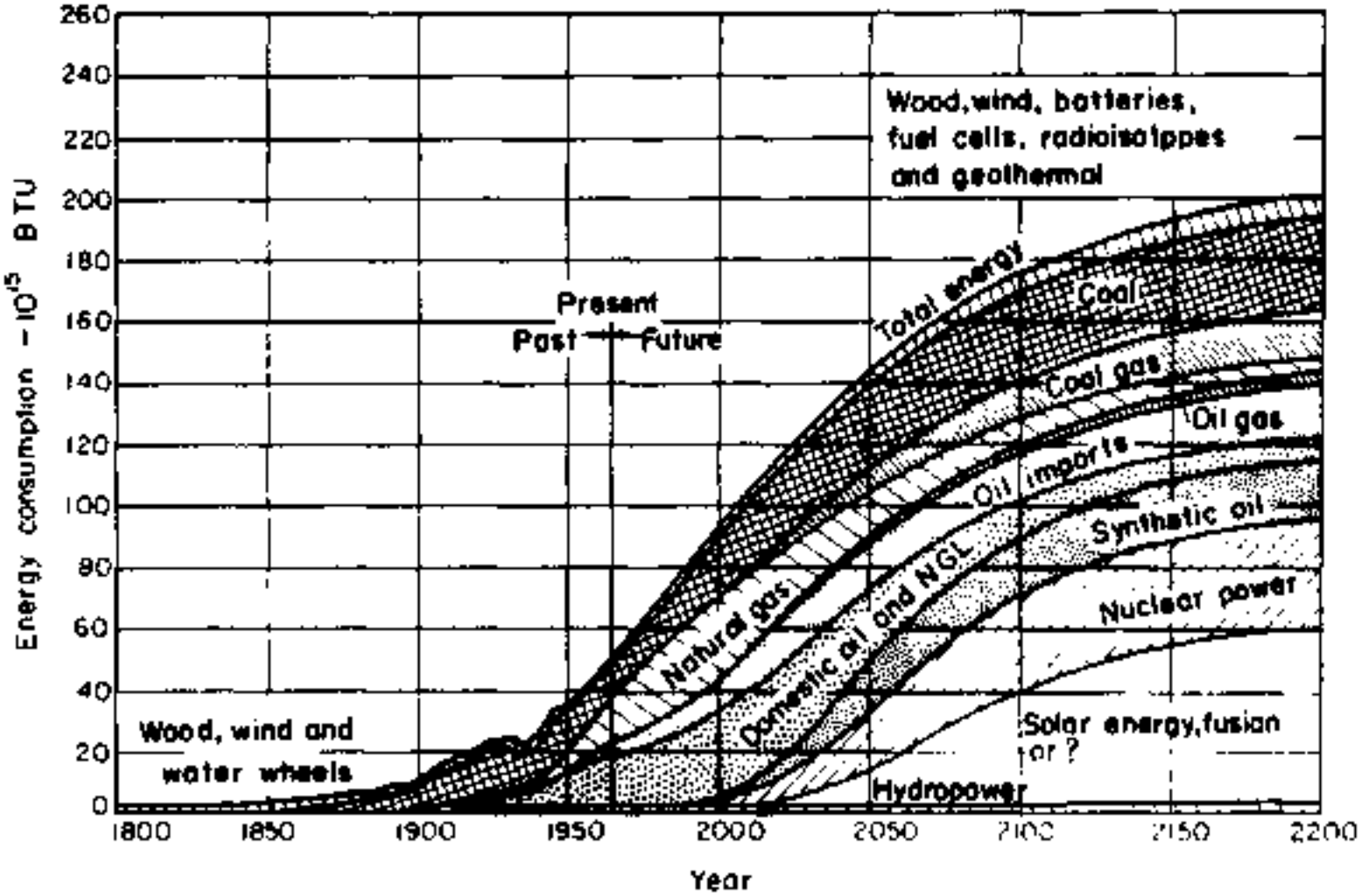
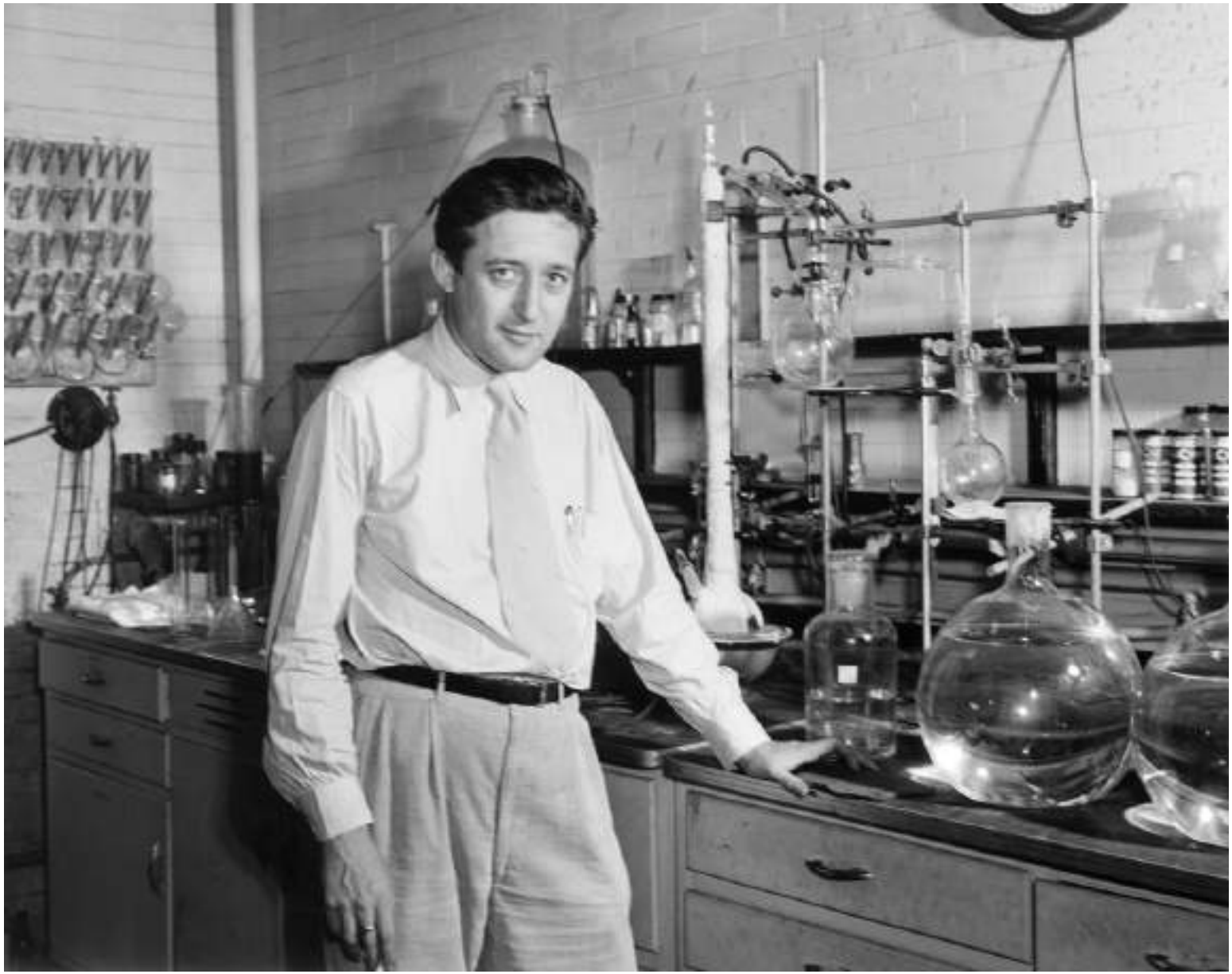


Fig. 1. Energy sources in the United States.

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

Atomic malthusians

Harrison Brown



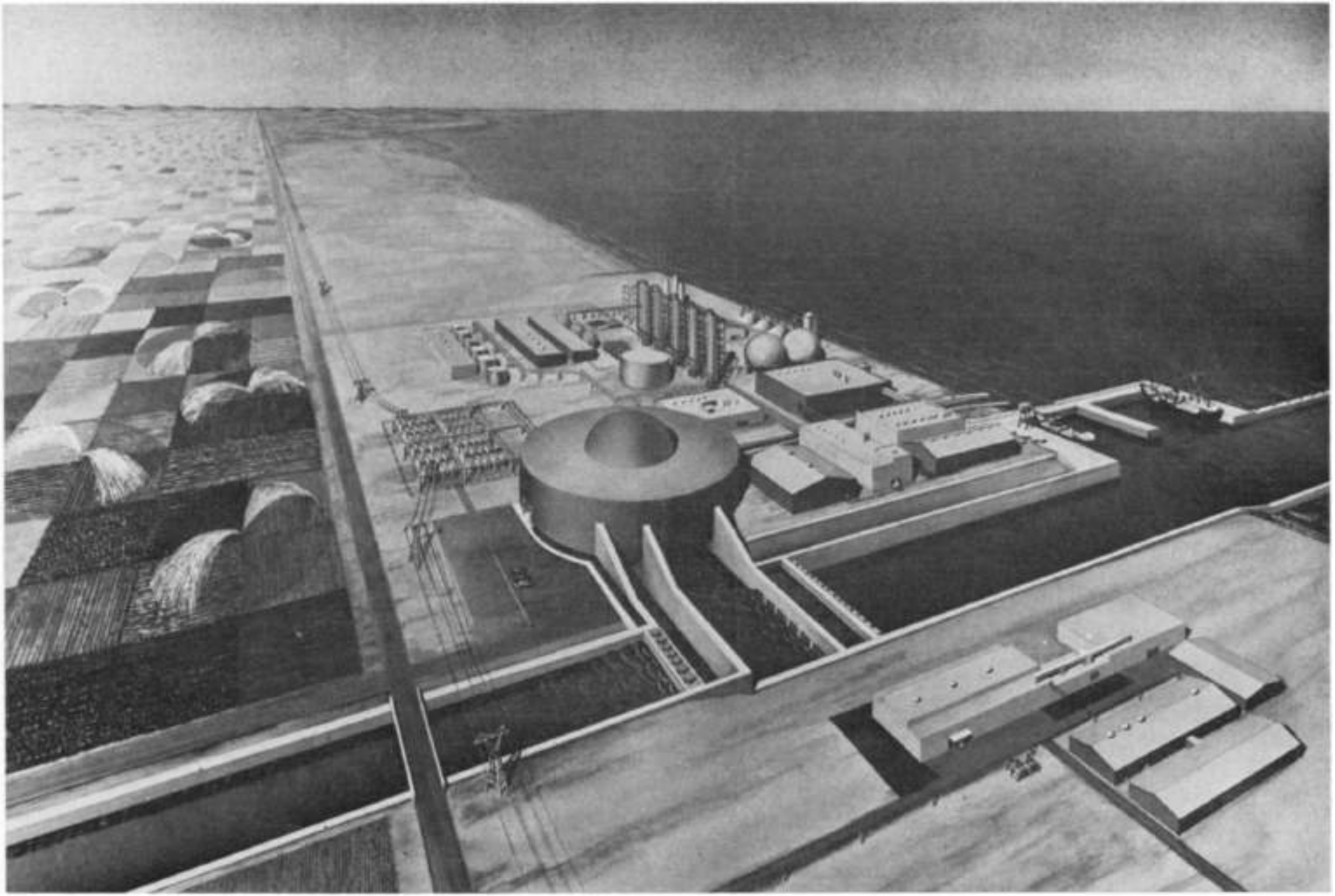


Figure 2. Artist's conception of an agro-industrial complex of the future, in which the energy of the atom is used to transform an arid desert region into productive farms and cities by supplying water, fertilizer, industrial chemicals, metals, etc. The usable portion of the earth's surface could be more than doubled in this way.

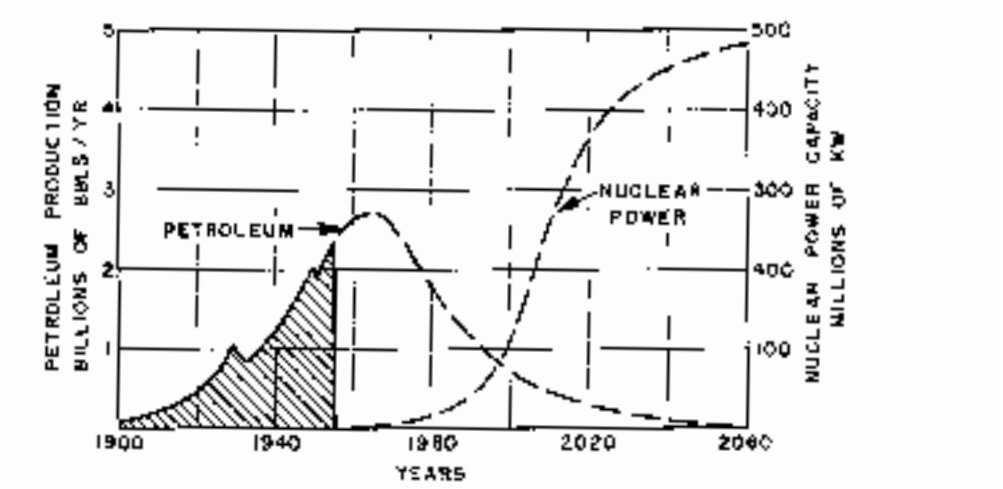


Figure 29 Concurrent decline of petroleum production and rise of production of nuclear power in the United States. Growth rate of 10 percent per year for nuclear power is assumed; actual rate may be twice this amount.

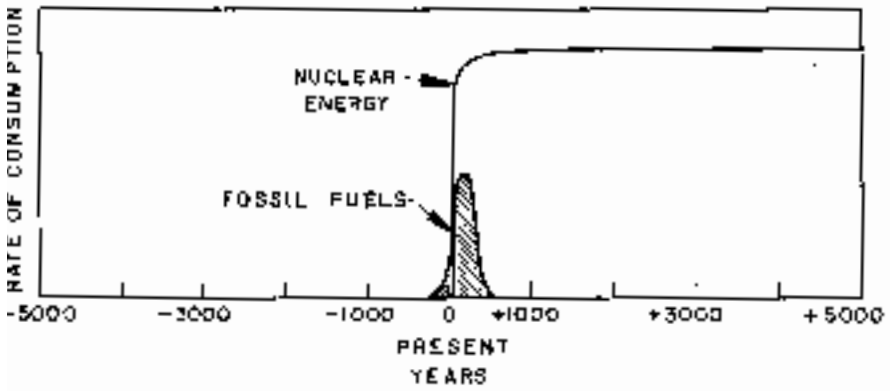
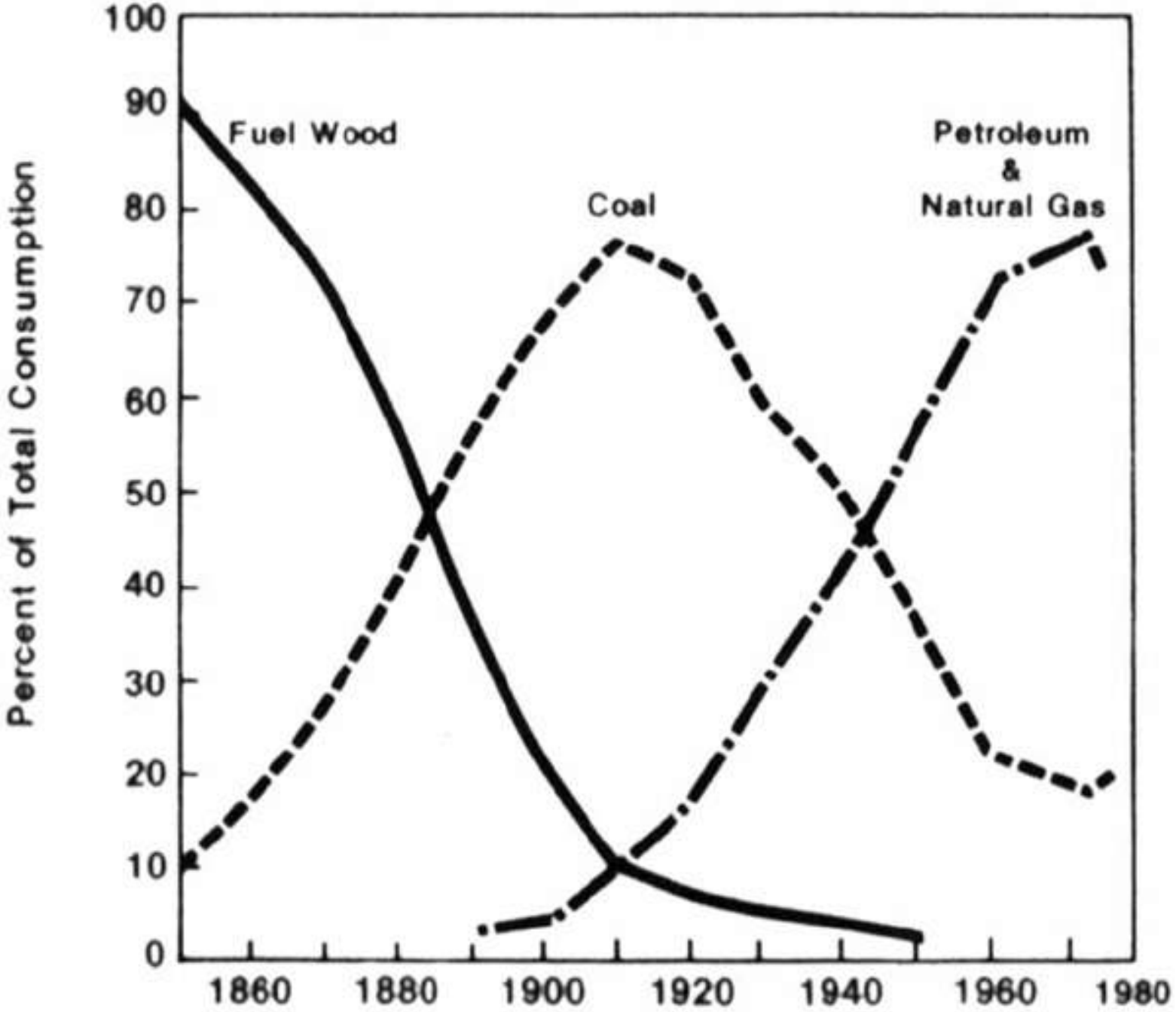
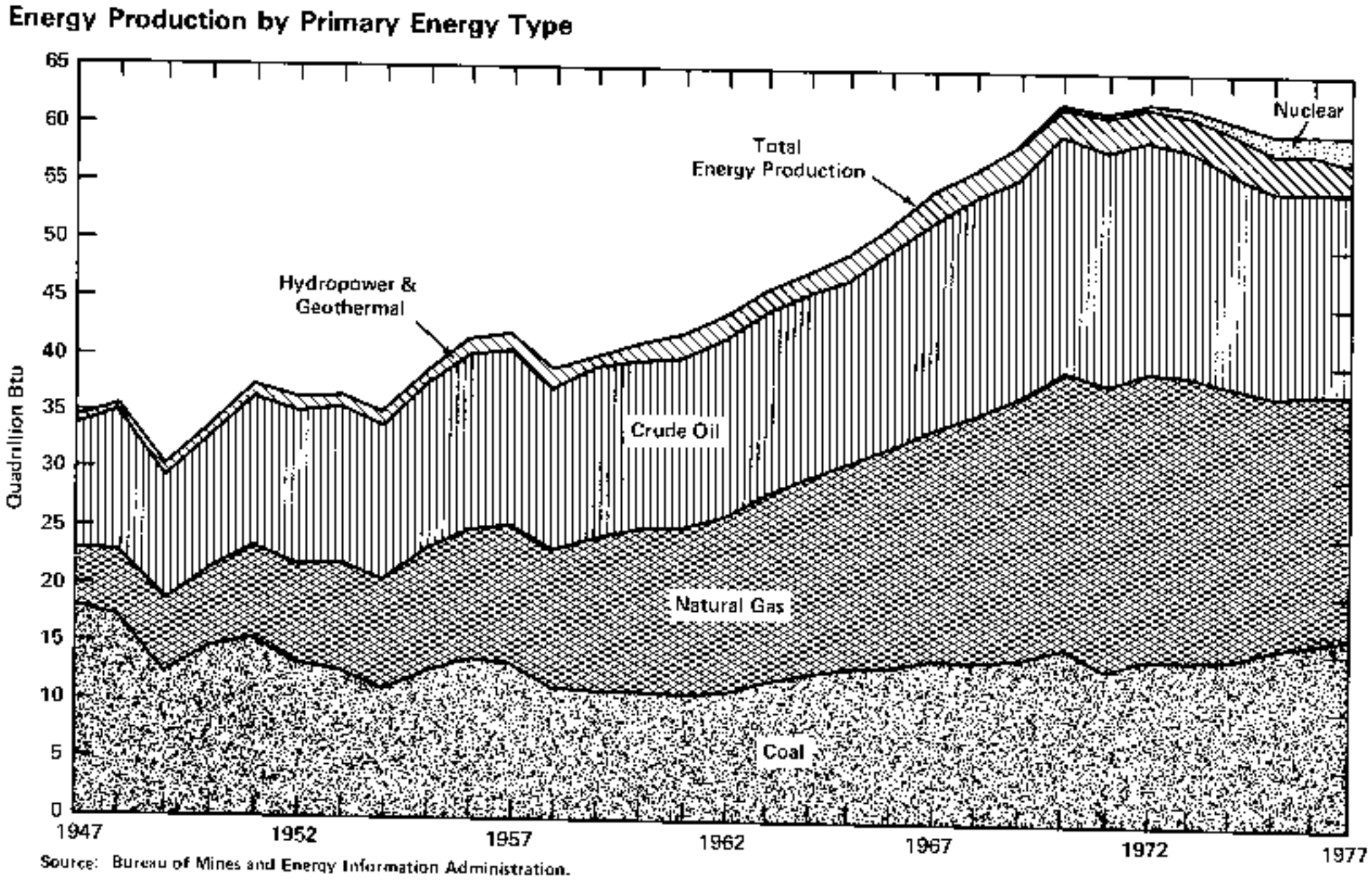


Figure 30 – Relative magnitudes of possible fossil-fuel and nuclear-energy consumption seen in time perspective of minus to plus 5000 years.

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

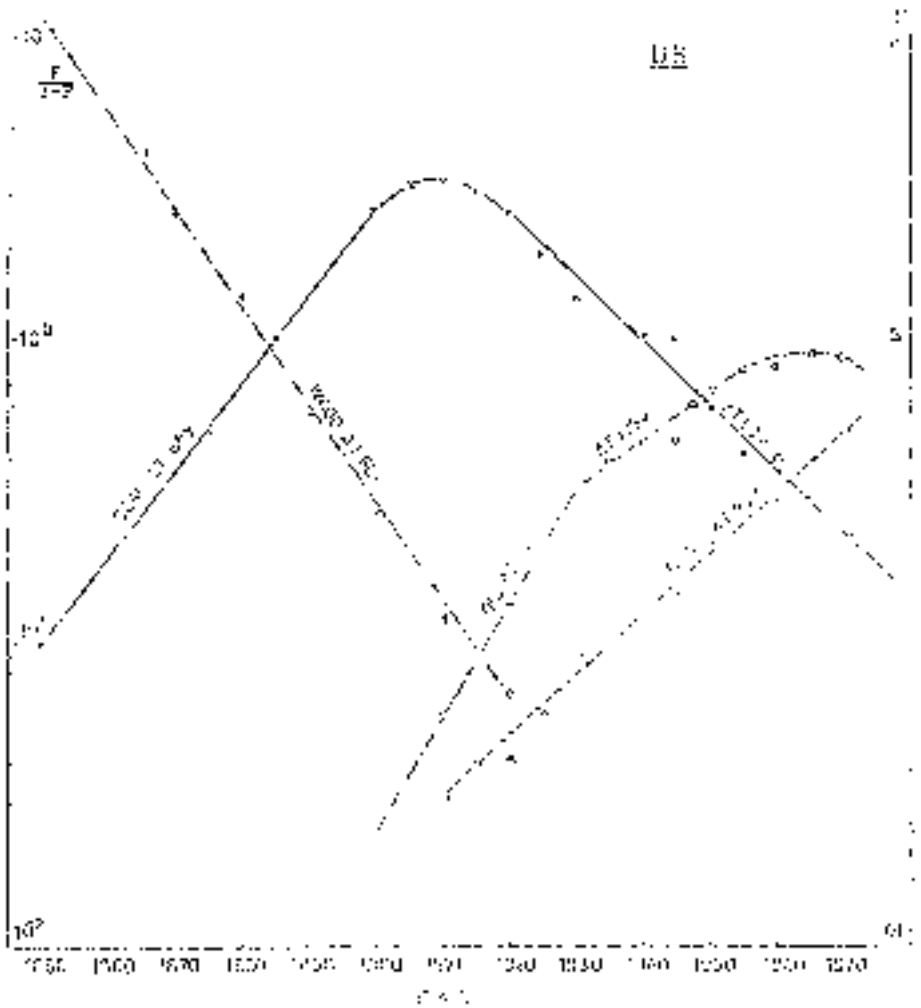


US *National Energy Plan*,1977

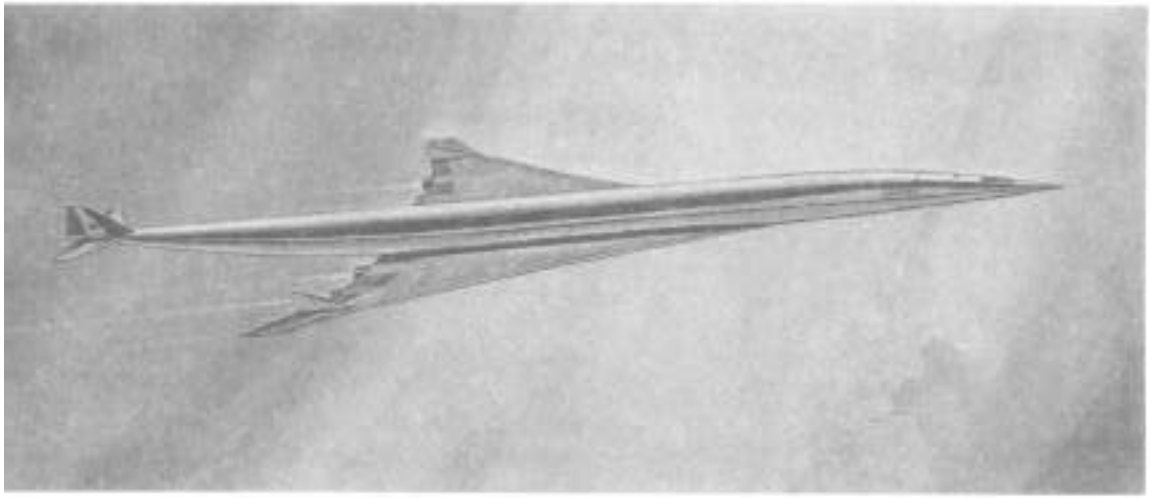


Energy Information Administration report to the Congress, 1978

Marchetti, IIASA, 1975



Avion à hydrogène : une utopie des années 1970



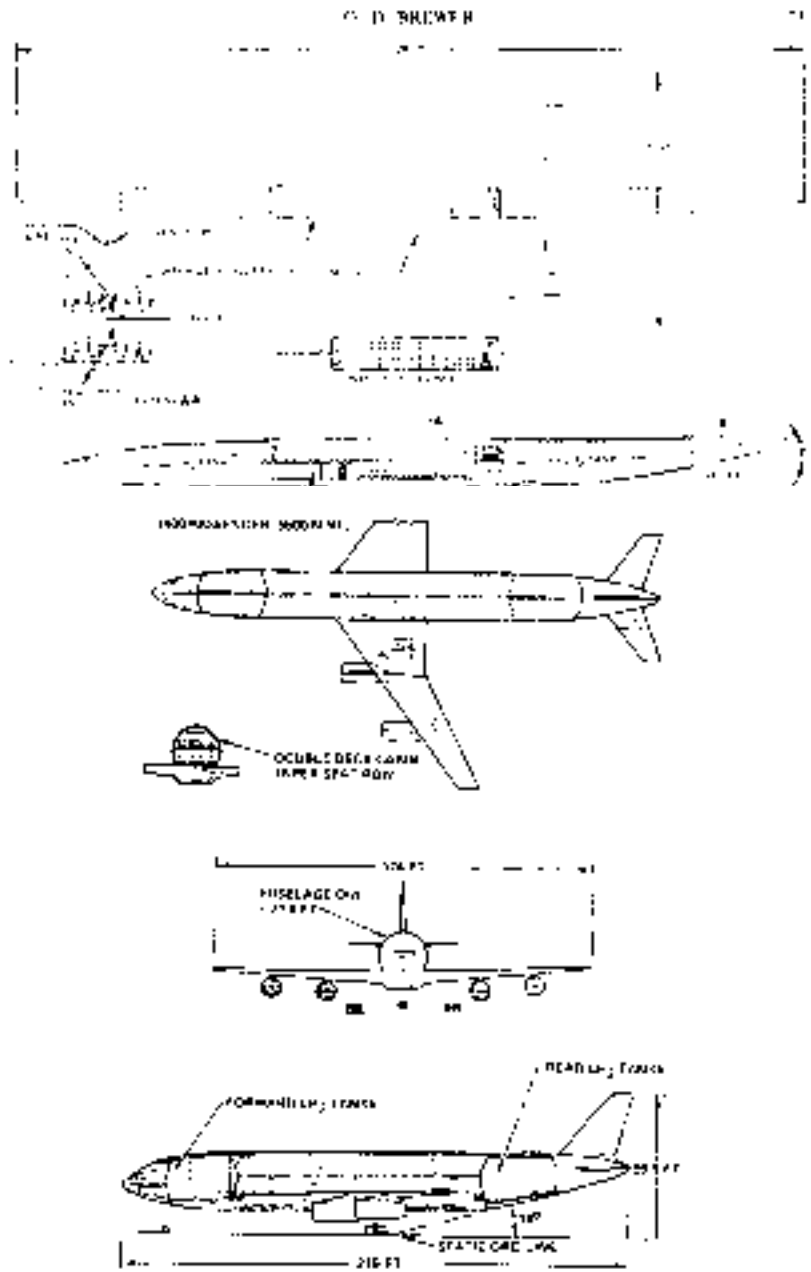
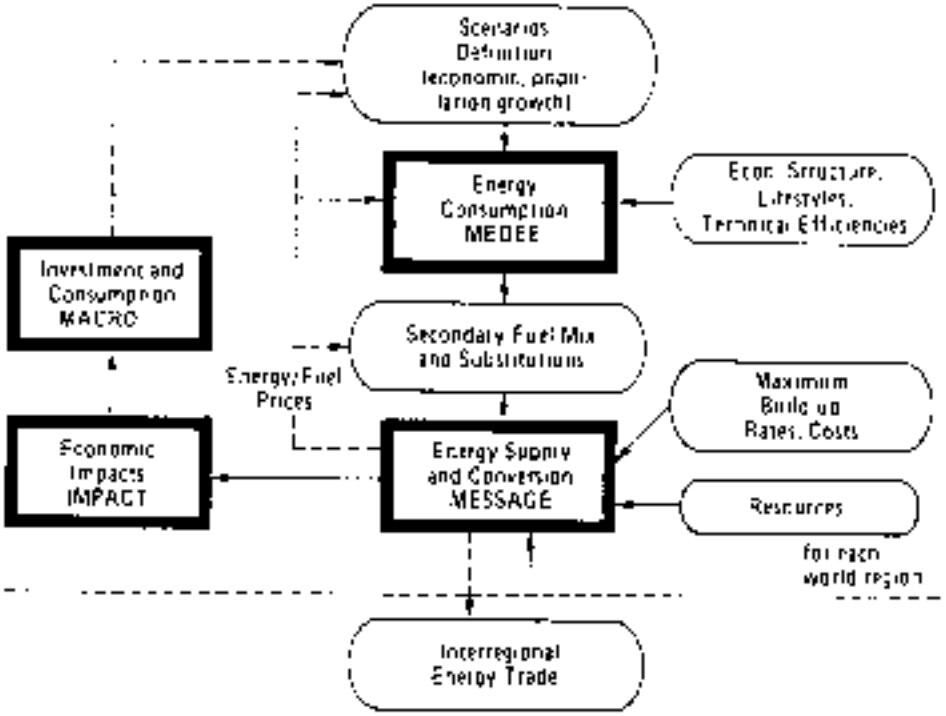


Fig. 10. General arrangement: LH, supersonic passenger transport aircraft.

Cesare Marchetti, critique des scénarios du IIASA



« Don't forget the system, the system will not forget you! »
Cesare Marchetti 1975

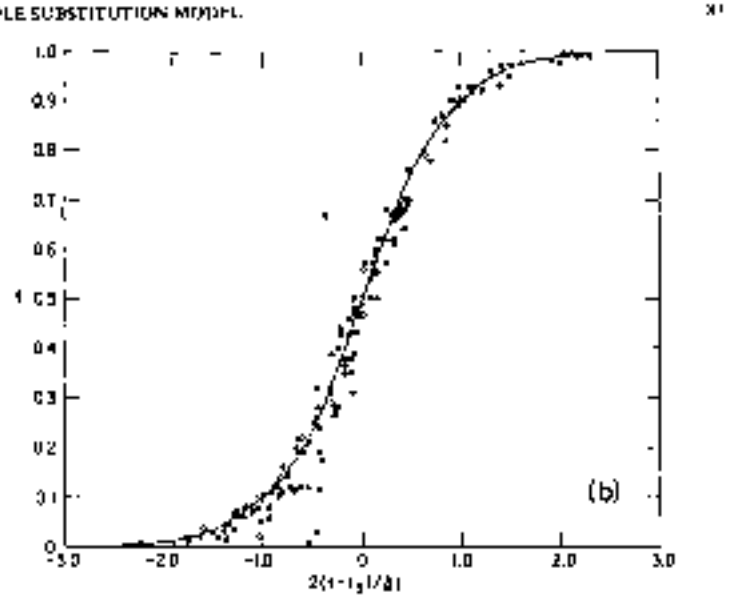
Cesare Marchetti, 1975

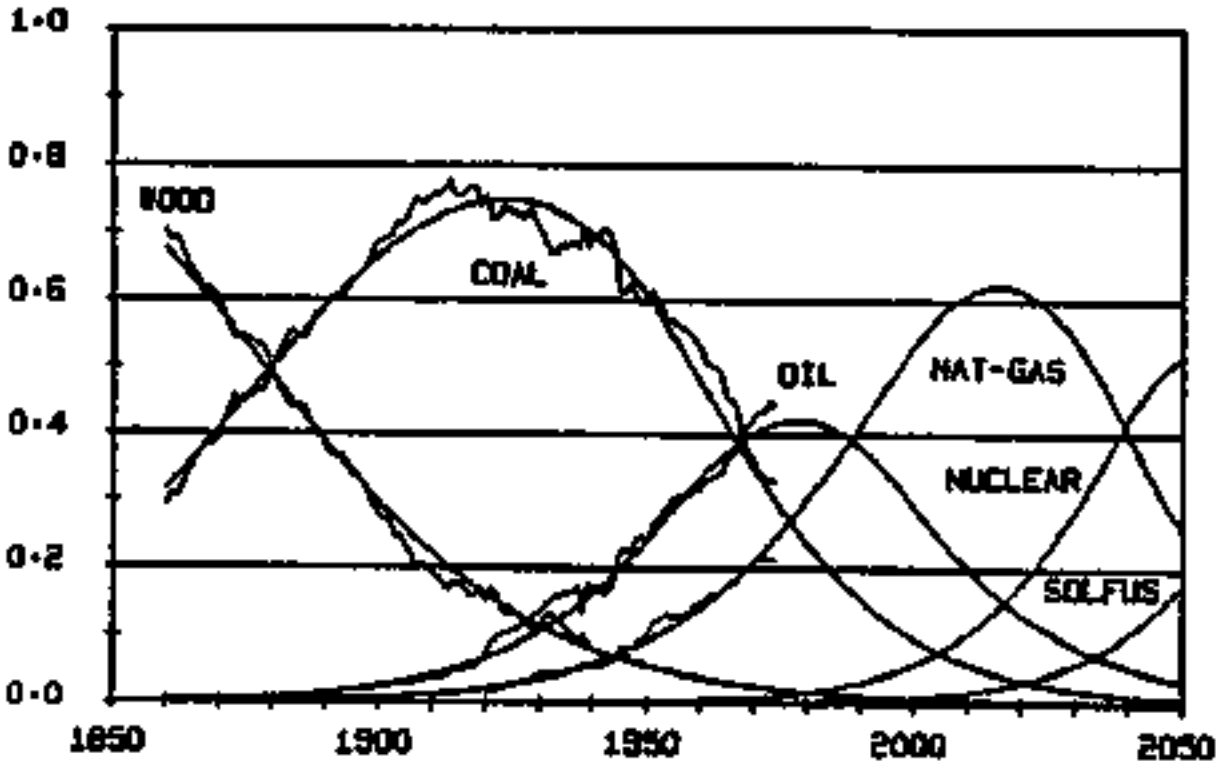
« The whole destiny of an energy source seems to be

completely predetermined in the first childhood

These trends go unscathed through wars,

wild oscillations in energy prices and depressions »





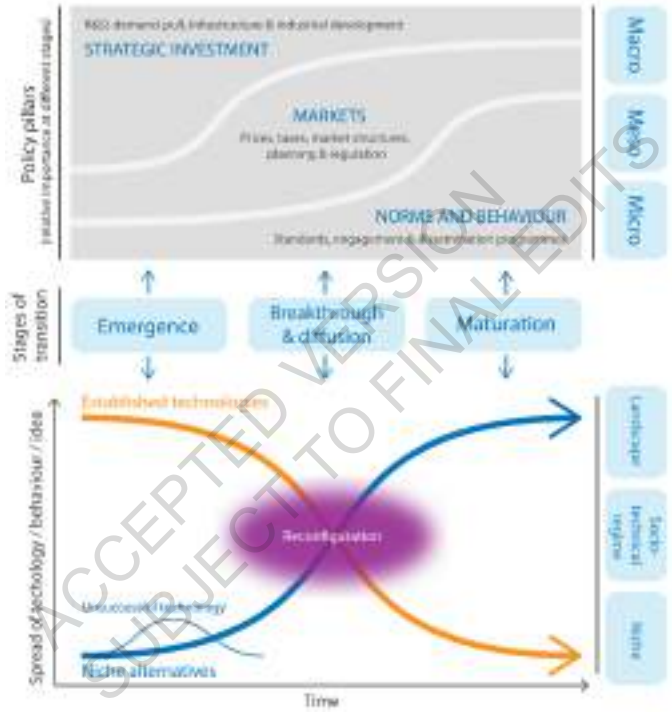


Figure 1.6: Transition dynamics: levels, policies and processes

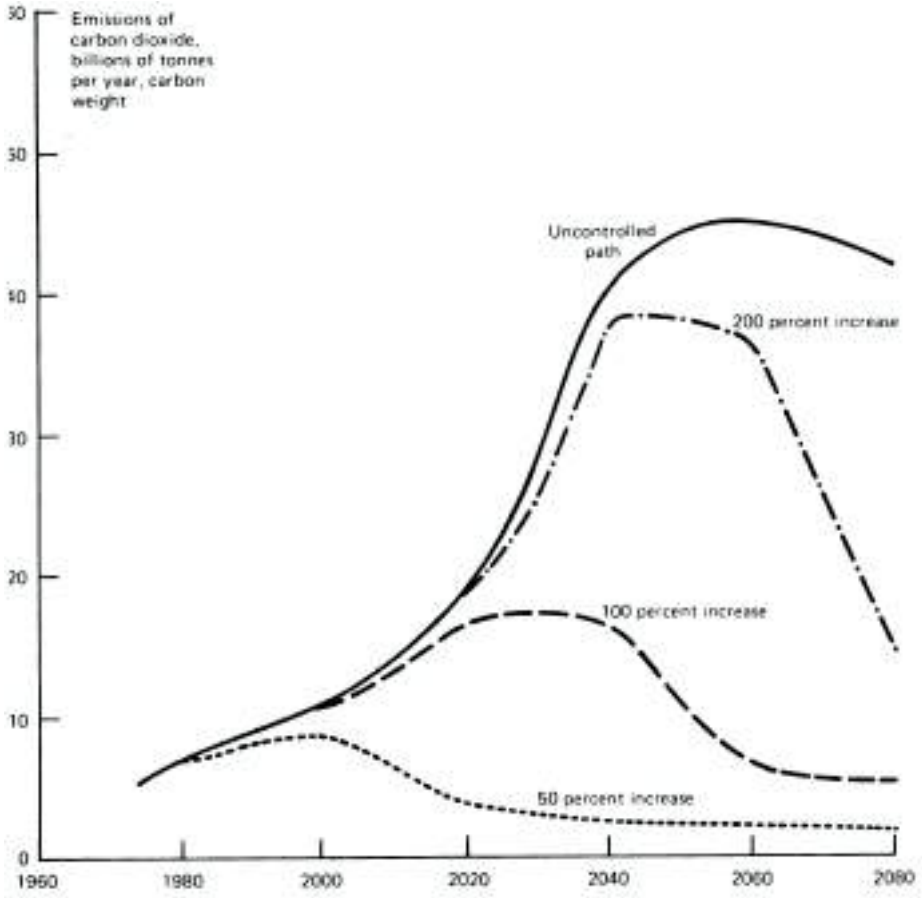
« We have to think climate as a resource »

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.



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.

OK : play the technology card!

John Sununu

Robert Reinstein

MTR-7443

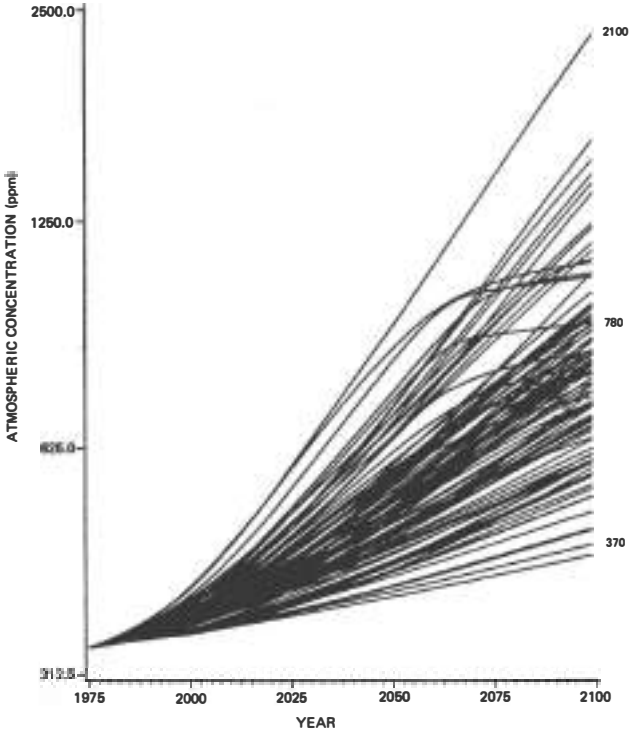
LIVING WITH CLIMATIC CHANGE

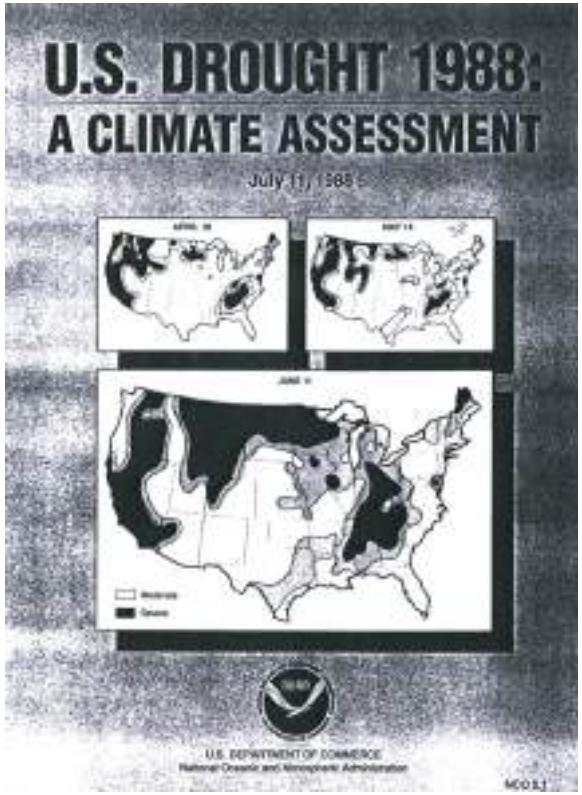
Phase II

A SUMMARY REPORT FROM A SYMPOSIUM AND WORKSHOP HELD BY THE MITRE CORPORATION McLEAN, VIRGINIA NOVEMBER 9, 10, AND 11, 1976

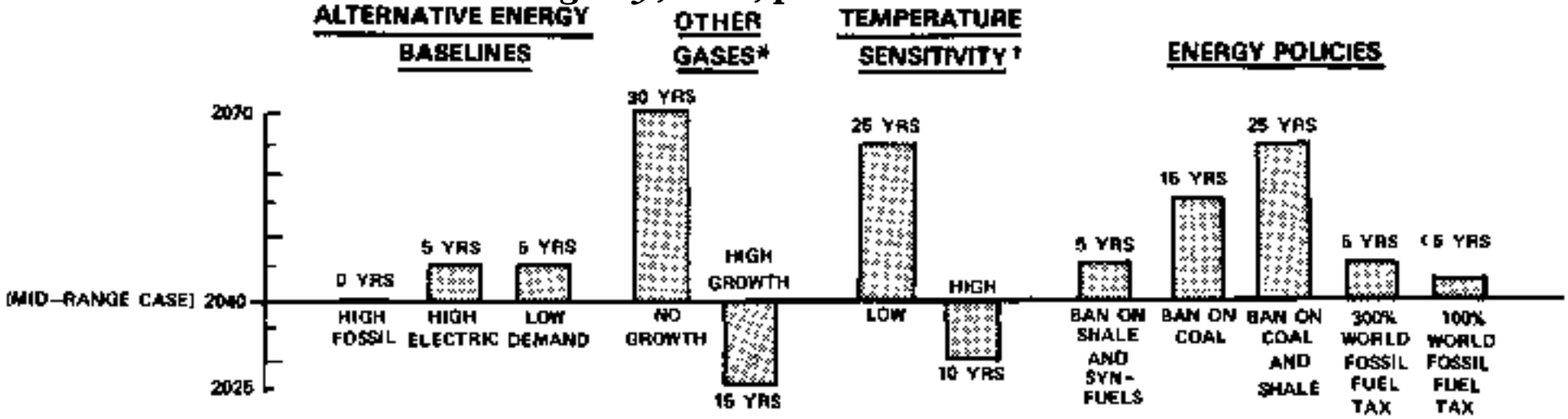
Sponsored by
The MITRE Corporation
Aspen Institute for Humanistic Studies
American Meteorological Society

Edited by: Edwin Keltz Dorothy Berks
January 1977





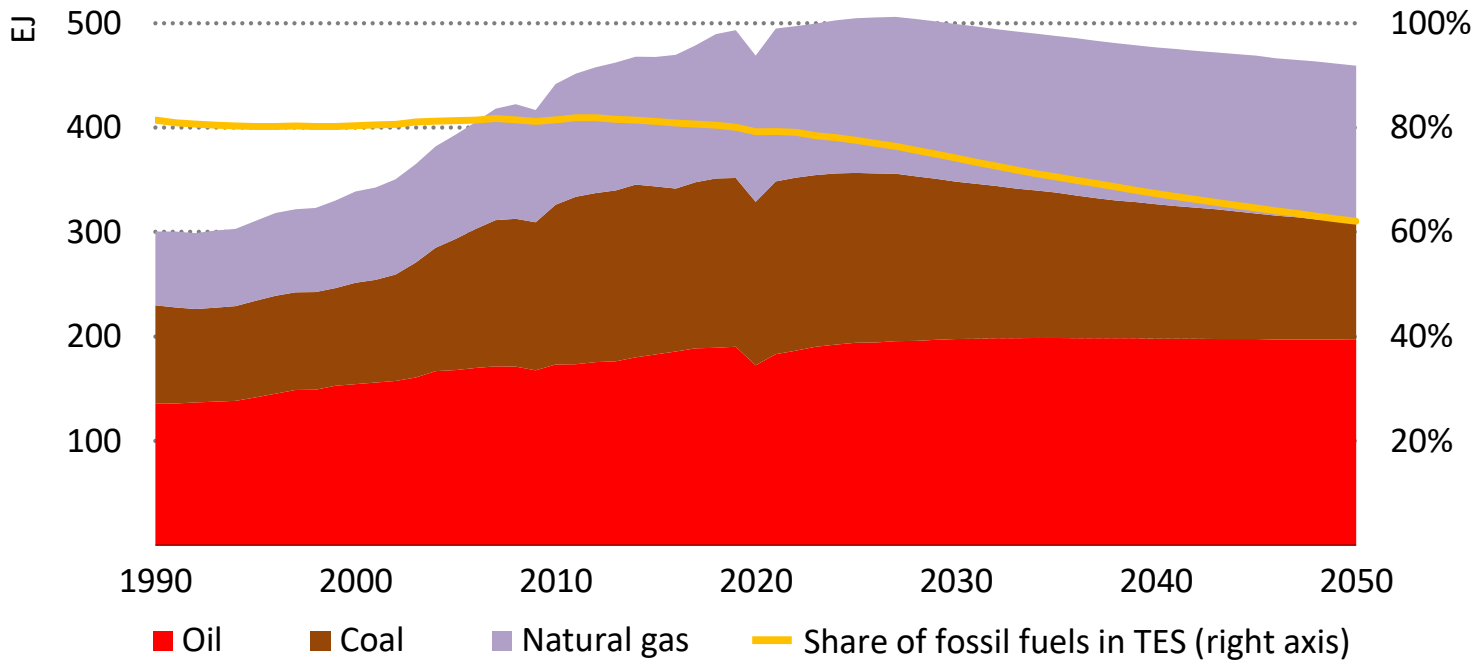
Changement de date d'un réchauffement de +2°C. Stephen Siedel et Dale Kayes, « Can De Delay A Greenhouse Warming? », *Environmental Protection Agency*, 1983, p. vi.



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).

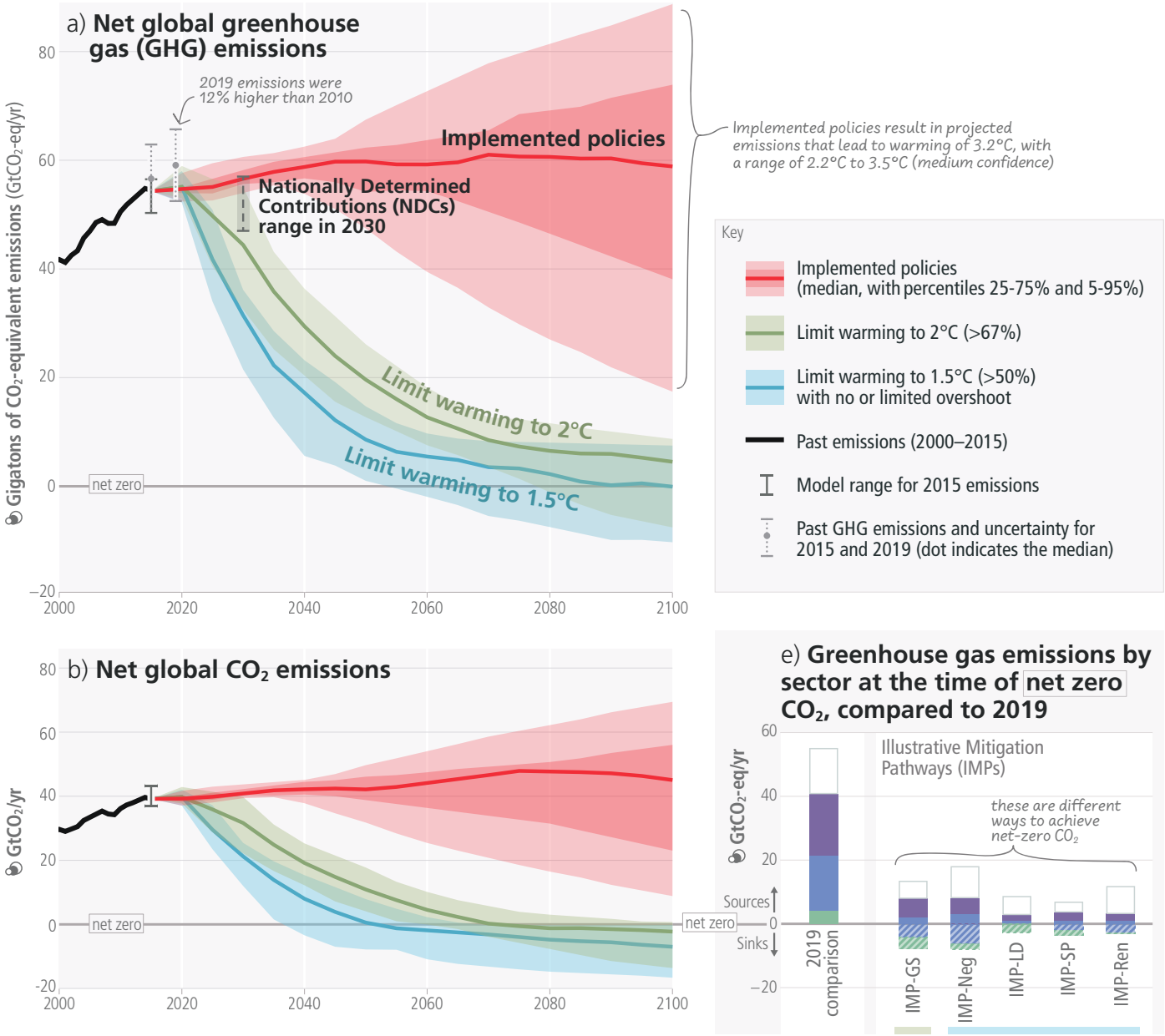
Figure 1.9 ▻ Fossil fuel demand in the STEPS, 1990-2050



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

Limiting warming to 1.5°C and 2°C involves rapid, deep and in most cases immediate greenhouse gas emission reductions

Net zero CO_2 and net zero GHG emissions can be achieved through strong reductions across all sectors




ÉCOCÈNE
SEUIL
Jean-Baptiste
Fressoz
SANS
TRANSITION
Une nouvelle
histoire
de l'énergie