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ENVS 119 - Energy & the Environment

01 - Syllabus, Class intro + Energy History

- Today**
- You said “GE”???
 - ENVS/ENGR 119 Syllabus
 - Online protocols
 - Energy and human history
 - Reading (Smil 2006)
 - Quiz #1
 - Quiz key + Wrap-up



What is General Education class?

GE are required for all 4yr students, all majors.

GE check basic analytical (math) and writing/reading skills, plus understanding of modern society.

GE main topic is chosen by students following their aspirations.

ENVS/ENGR 119 is a GE Area R class opened to students curious about the environment, how society is powered, and the challenge of Climate change.

ENVS/ENGR 119-01 - Syllabus

- 3 units class = 9 hours per week
- 500 pages to read (all on Canvas)
- 28 Lectures (verbal/canvas participation 10% of grade)
- 12 quizzes (10% of grade)
- 3 Assignments (20% of grade -25% per week late)
- 2 Exams (40% of grade)
- Final paper (book review) (20% of grade)
- All exams/quizzes are proctored, in-class, in Lockdown Respondus secured browser.

ENVS/ENGR 119 - Online Protocols

- Permanent Zoom URL for the semester
- Be on time, camera ON, Mic OFF (no surrounding noise)
- Zoom name MUST be exactly your SJSU name
- Participation (1) Raise hand (2) Mic ON (3) Wait prof. call
- Exams/Quizzes = Camera ON, Mic OFF, on Respondus from Windows / Mac OS or iOS (iPad only)
<https://www.sjsu.edu/ecampus/teaching-tools/respondus/faq/index.html>
- All exams are timed. All questions are randomized. Replies are also randomized (no way to txt your friend the “correct” answer)
- No Make-up exams or quizzes. Excused = no grade, unexcused = F

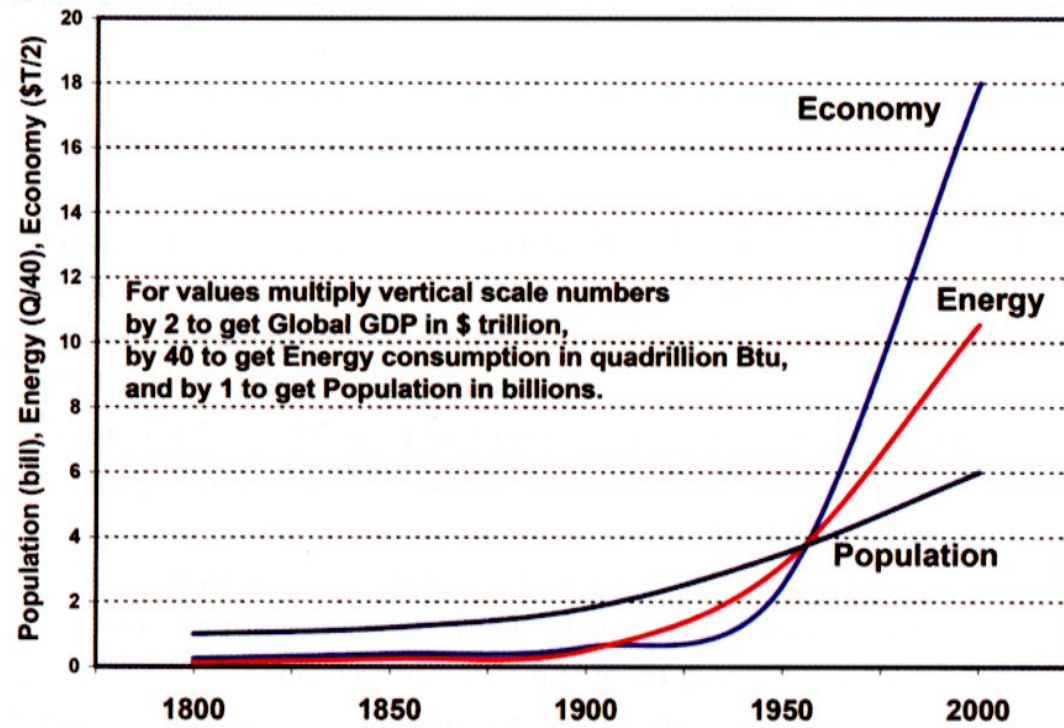
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Q/A

Energy History v. Population and Economy

- Energy use grows with population AND economic dev.

Global Growth of Population, Energy, and Economy, 1800–2000



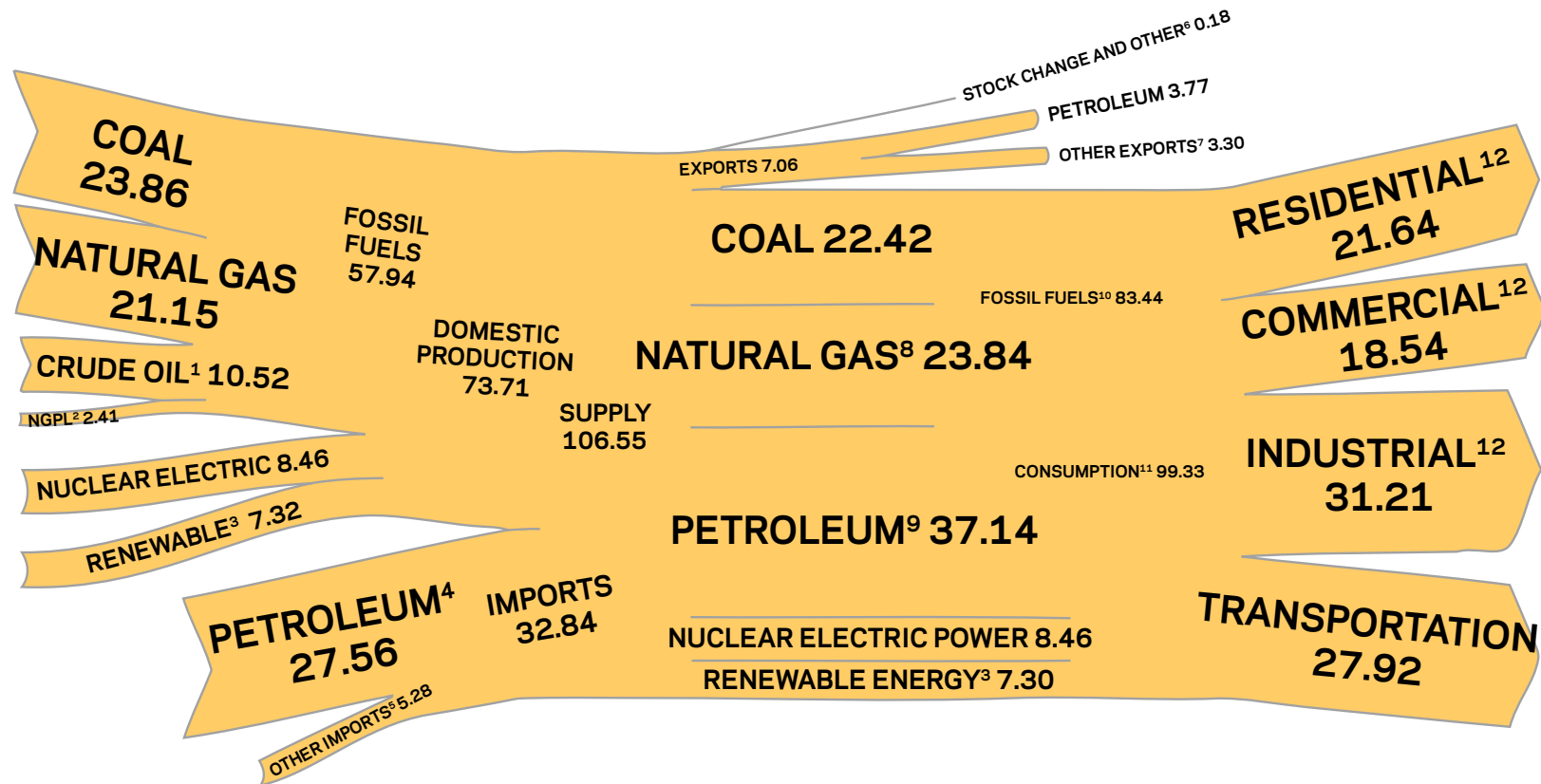
The Energy Ladder (Technology transition)

Date	Population	Economy	Energy “age”
<AD 1	<0.3 billion	<0.1 T\$	<ul style="list-style-type: none"> • Human + animal power • Wood (thermal)
1-1800	<1 billion	<0.7 T\$	<ul style="list-style-type: none"> • Human + animal power • Wood + coal (thermal) • Wind/water
1900-1950	2 billion	2 T\$	<ul style="list-style-type: none"> • Petroleum (travel + transport) • Electricity age
1950-1980	4 billion	4 T\$	<ul style="list-style-type: none"> • All of the above • Nuclear power
1980-2000	6 billion	36 T\$	Information age, energy and economic growth begin to diverge

What do we do with energy?

Energy Flow, 2008
(Quadrillion Btu)

© 2008 - updated version from Energy for Sustainability, John Randolph and Gilbert M. Master. p17



¹ Includes lease condensate.

² Natural gas plant liquids.

³ Conventional hydroelectric power, biomass, geothermal, solar/photovoltaic, and wind.

⁴ Crude oil and petroleum products. Includes imports into the Strategic Petroleum Reserve.

⁵ Natural gas, coal, coal coke, fuel ethanol, and electricity.

⁶ Adjustments, losses, and unaccounted for.

⁷ Coal, natural gas, coal coke, and electricity.

⁸ Natural gas only; excludes supplemental gaseous fuels.

⁹ Petroleum products, including natural gas plant liquids, and crude oil burned as fuel.

¹⁰ Includes 0.04 quadrillion Btu of coal coke net imports.

¹¹ Includes 0.11 quadrillion Btu of electricity net imports.

¹² Primary consumption, electricity retail sales, and electrical system energy losses, which are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Note, "Electrical Systems Energy Losses," at end of Section 2.

Notes: • Data are preliminary. • Values are derived from source data prior to rounding for publication. • Totals may not equal sum of components due to independent rounding.

Sources: Tables 1.1, 1.2, 1.3, 1.4, and 2.1a.

ENVS/ENGR 119 - Reading (Smill - 2006)

- Read now Smill 2006
Files/readings/01_smill-article-2006-encyclopedia-of-world-history
- 10 minutes “down” time
- Take quiz #1
- Back to class for quiz key
(15 minutes before end of time)



ENVS/ENGR 119

End