

From Public Understanding to Public Policy: Energy, Technology & Climate Science

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Presented at 2005 Asilomar Conference

on Energy and Transportation

Asilomar, California

24 August 2005

Public Policy vs. Public Opinion



What is the major source of the recent “strange weather”? (Nov 1997)

17 %	El Niño
11 %	Pollution/Resource degradation
10 %	“Space junk”
8 %	Divine intervention
8 %	Ozone depletion
5 %	Global warming
5 %	Natural variability
34 %	Don't Know



Source: CBS News/New York Times poll, November 23-24, 1997. Roper Center
Question ID: USCBSNYT.97011B, Q06

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THE DEATH OF
ENVIRONMENTALISM ?

Strong Regulations, Weak Support?

- “The truth is that for the vast majority of Americans, the environment never makes it into their top ten list of things to worry about. Protecting the environment is indeed supported by a large majority — *it’s just not supported very strongly*. Once you understand this, it’s much easier to understand why it’s been so easy for anti-environmental interests to gut 30 years of environmental protections.”

Evidence of a Rightward Shift?

- “The number of Americans who agree with the statement, ‘To preserve people’s jobs in this country, we must accept higher levels of pollution in the future,’ increased from 17 percent in 1996 to 26 percent in 2000. The number of Americans who agreed that, ‘Most of the people actively involved in environmental groups are extremists, not reasonable people,’ leapt from 32 percent in 1996 to 41 percent in 2000.”

Four Degrees of Opinion

- **Direction** of Opinion: Pro/Con
 - Favor or oppose a policy proposal or technology
- **Degree**/extremity of opinion: Strong/mild
 - Assess severity of problem
- **Salience**: degree of personal interest
 - Environment rates as an important issue, effort to learn about issues
- **Intensity**: degree of personal commitment
 - Active in environmental movement, green purchasing

Agree with goals of the environmental movement - 83%

Active participant in the environmental movement – 16%

Belong to a national or international envt'l organization - 9%

Source: Saad and Dunlap 2000, <http://www.gallup.com/poll/releases/pr000417.asp>

A Growing Scientific Consensus?

- There is a consensus among the great majority of scientists that global warming exists and could do significant damage
 - From 28 % in 1994 to 43 % in 2004 and 52 % in 2005
- Scientists are divided on the existence of global warming and its impact
 - From 58 % in 1994 to 50 % in 2004 and 39 % in 2005
- Republicans account for most of the recent shift:
 - There is a consensus among the great majority of scientists that global warming exists... R 30 % -> 41 %, D 55 % -> 62 %
 - Scientists are divided on the existence of global warming and its impact... R 63% -> 46%, D 39% -> 33%

Source: PIPA/Knowledge Networks, Americans on Climate Change: 2005

Effects of believing in a scientific consensus

- Suppose there were a survey of scientists that found that an overwhelming majority have concluded that global warming is occurring and poses a significant threat. If this were the case, do you think the US should:

	Not asked to assume consensus	When asked to assume consensus
Not take any steps to reduce greenhouse gases that would have economic costs	21 %	6 %
Take steps to reduce greenhouse gases, but only those that are low in cost	42 %	35 %
Take steps to reduce greenhouse gases, even if this involves significant costs	34 %	56 %

U.S. Perceptions of Climate Policy

- At present, do you think the US, compared to other developed countries does:
 - More than average to limit its greenhouse gases – 24% (of which, 14% D, 38% R)
 - About the average – 44%
 - Less than average – 27% (40% D, 16% R)
- Just based on your impressions, do you think President Bush favors or opposes the U.S. participating in the Kyoto agreement to reduce global warming?
 - Favors – 43%
 - Opposes – 43% (54% D, 36% R)

Testing EQ: Sample Questions

- How is most of the electricity in the U.S. generated? Is it...
 - » a. By burning oil, coal, and wood 33
 - » b. With nuclear power 12
 - » c. Through solar energy 2
 - » d. At hydro electric power plants? 39
 - » Don't know 13

- Carbon monoxide is a major contributor to air pollution in the U.S. Which of the following is the biggest source of carbon monoxide? Is it...
 - » a. Factories and businesses 25
 - » b. People breathing 3
 - » c. Motor vehicles, or 65
 - » d. Trees? 4
 - » Don't know 4

Source: NEETF/Roper, *Understanding Environmental Literacy in America*. May 2004, Appendix 1

Energy Knowledge Questions (2001)

Source of most energy usage in average home	66 %
Percentage of oil imported from foreign sources	52 %
Percentage of world's energy consumed by US	50 %
Disposal of nuclear waste in the United States	47 %
Fastest and most cost-effective way to address energy needs	39 %
US industry increased energy demands the most in past ten years	39 %
Fuel used to generate most energy in US	36 %
How most electricity in the United States is generated	36 %
Sector of US economy consuming greatest percentage of petroleum	33 %
Average miles per gallon used by vehicles in past 10 years	17 %

Average number of correct answers: 4.1

Knowledge vs Behavior [US]

Energy & Environment-Related Activities	Total Correct	7-10 Correct	4-6 Correct	0-3 Correct
Turn off lights and electrical appliances when not in use	89	96	91	85
Lower the thermostat in the winter to conserve energy	65	73	67	60
Recycle things such as newspapers, cans and glass	60	71	60	58
Reduce the use of air conditioning in summer to conserve energy	51	55	51	50
Purchase lamps and appliances that are energy efficient	47	48	48	45
Accelerate slowly to conserve gasoline when driving	41	39	41	43
Use other types of transportation, such as biking or the bus, instead of driving	13	11	13	14

Source: NEETF/Roper, Americans' Low Energy IQ, Aug 2002, Figure 22

Implications for Transport?

"Which ONE of the following would you say deserves the most blame for higher energy prices? . . ."	Aug/05	Apr/05
"Oil companies that want to make too much profit"	30 %	29 %
"Foreign countries that dominate oil reserves"	22 %	24 %
"Politicians"	21 %	23 %
"Environmentalists who want to limit oil exploration"	9 %	8 %
"People who drive gas-guzzling vehicles"	7 %	6 %
Other (vol.)	3 %	1 %
No one is to blame/Not a problem (vol.)	1 %	1 %
All equally (vol.)	5 %	6 %

Source: Associated Press/AOL poll conducted by Ipsos-Public Affairs. Aug. 9-11, 2005

AGS Project on Social and Political Implications of CCS

- MIT (Herzog, Ansolabehere)
- Cambridge (Reiner)
- Chalmers University of Technology (Johnsson)
- University of Tokyo (Fuji/Yamaji)
- Industrial Partners: Vatenfall, EPRI, CRIEPI, Fuji Research Institute
- NGO Partners: Clean Air Task Force, Environment NE
- Other Projects on Social and Political Aspects of CCS: CCP, Manchester/Tyndall, UKCCSC, CSIRO, CMU, SFU, EC, DOE
Regional partnerships

Survey Design & Distribution

- **US/UK/Sweden – 20 questions**
 - US – Knowledge Networks (10/2003)
 - » 1,205 respondents out of 1,710 (70%)
 - UK – YouGov (8/2004)
 - » 1,056 respondents out of 2,640 (40%)
 - Sweden -- SCB (Statistics Sweden) (12/2004)
 - » 589 respondents out of 1,500 (39%)
- **Japan – 5 written baseline questions on CCS and other technologies + 66 questions on CCS (w/ information)**
 - Fuji Research Institute (with NAIST)
 - » Survey of Japanese public in the Tokyo metropolitan area and Sapporo
 - » 1,006 responses, response rate of 63.9%

Economy versus Environment

Answer	US %	UK %	Sweden %
The highest priority should be given to protecting the environment, even if it hurts the economy	9	11	15
Both the environment and the economy are important, but the environment should come first	45	46	53
Both the environment and the economy are important, but the economy should come first	39	30	20
The highest priority should be given to economic considerations such as jobs even if it hurts the environment	8	3	4
Not sure	NA	11	7

What are the Three Most Important Issues Facing the US Today?

Rank	Issue	%
1	Terrorism	42
2	Health Care	35
3	Economy	35
4	Unemployment	30
5	Family Values	20
6	Education	19
7	Federal Budget Deficit	15
8	Foreign Policy	14
9	Crime	14
10	Social Security	13
11	Drugs	12

Rank	Issue	%
12	Taxes	11
13	Environment	9
14	Poverty	8
15	Aging Population	5
16	Income Inequality	4
17	AIDS	4
18	Abortion	4
19	Racism	4
20	Welfare	3
21	Inflation	3
22	Stock Market	2

What are the Three Most Important Issues Facing the UK Today?

Rank	Issue	%
1	Asylum seekers	42
2	Terrorism	39
3	Crime	31
4	Health care	26
5	Education	17
6	Drugs	16
7	Aging population	15
8	Environment	13
9	Taxes	13
10	European Union	11
11	Economy	10
12	Family values	10

Rank	Issue	%
13	Foreign policy/Influence	10
14	Introducing €/ Keeping £	7
15	Poverty	7
16	Welfare	6
17	Unemployment	5
18	Income inequality	5
19	Racism	4
20	Social exclusion	4
21	Inflation	2
22	Budget deficit	1
	Others	3
26	None of these	1

What are the Three Most Important Issues Facing Sweden Today?

Rank	Issue	%
1	Health care	57
2	Unemployment	44
3	Education	41
4	Crime	28
5	Environment	24
6	Economy of the state	21
7	Income inequity	14
8	Welfare	14
9	Aging population	11
10	Taxes	8

Rank	Issue	%
11	Drugs	7
12	Budget deficit	5
13	Racism	4
14	Poverty	4
15	Foreign policy	2
16	Inflation	2
17	Terrorism	2
18	AIDS	1
19	Stock market	1
	Others	4

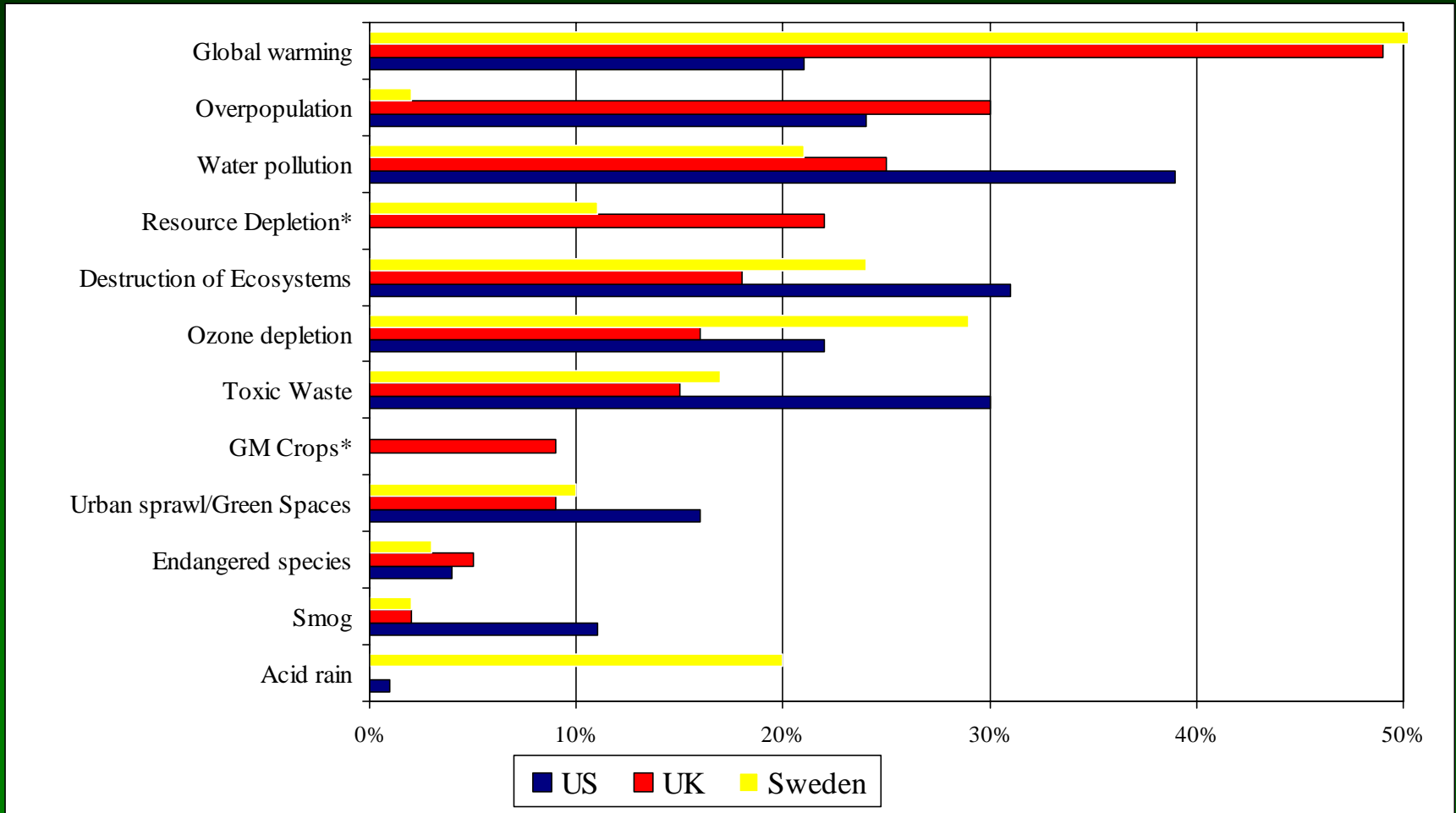
How Should We Address Global Warming?

Answer	US	UK	Sweden	Japan
Global warming has been established as a serious problem and immediate action is necessary	17	41	35	54
There is enough evidence that global warming is taking place and some action should be taken	36	33	45	34
We don't know enough about global warming and more research is necessary before we take any actions	24	18	13	8
Concern about global warming is unwarranted	7	4	2	0
Not sure	16	4	3	3

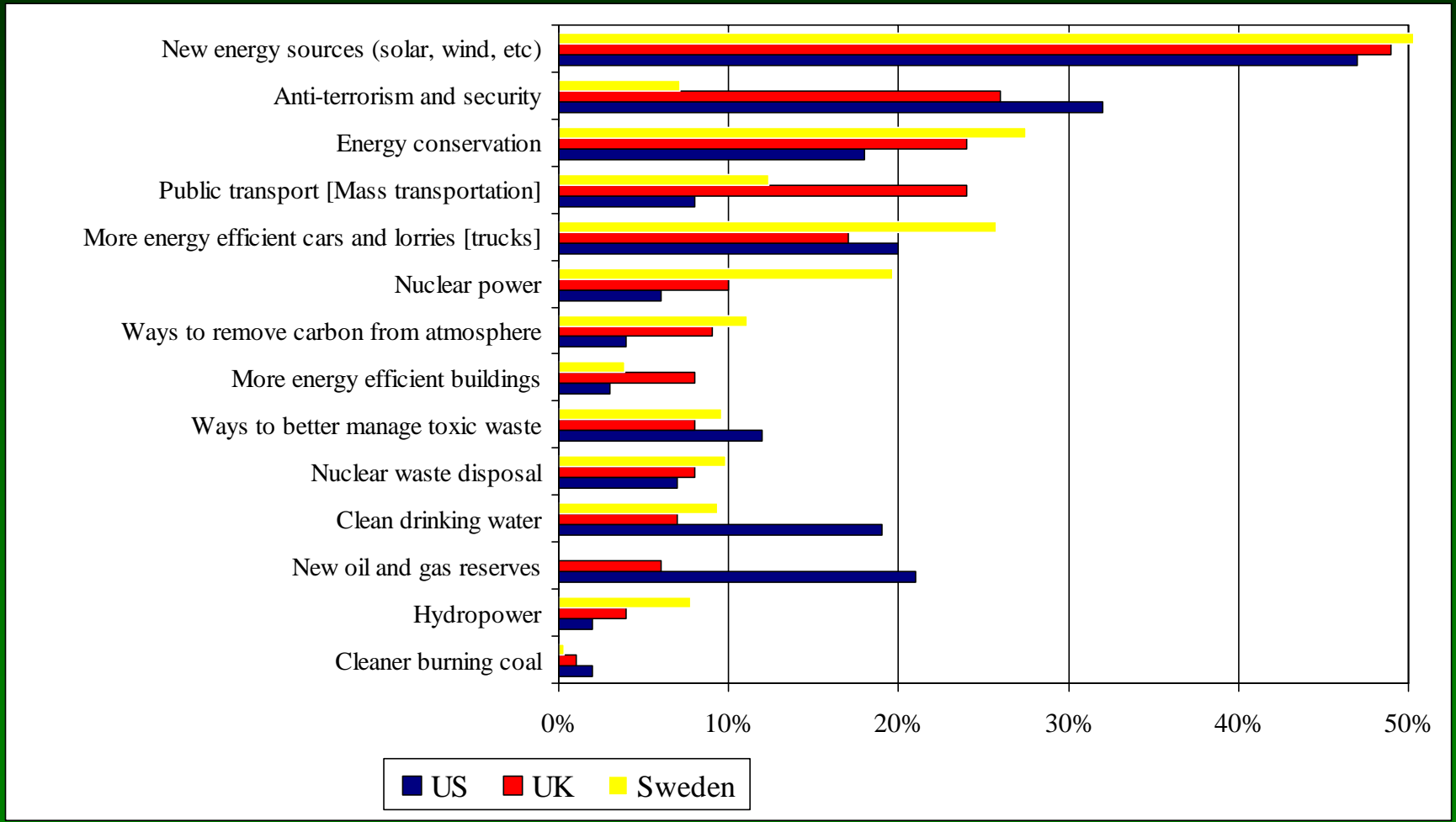
How Will We Address Global Warming?

Answer	US	UK	Sweden	Japan
I believe that firms and government researchers will develop new technologies to solve the problem	21	26	37	22
I believe we will have to change our lifestyles to reduce energy consumption	32	27	22	66
I believe we will learn to live with and adapt to a warmer climate	17	13	19	4
I believe global warming is a problem but [my country] won't do anything about it	24	21	14	6
I believe we will do nothing since global warming is not a problem	7	3	2	NA
Not sure	NA	10	6	2

Top Two Environmental Concerns



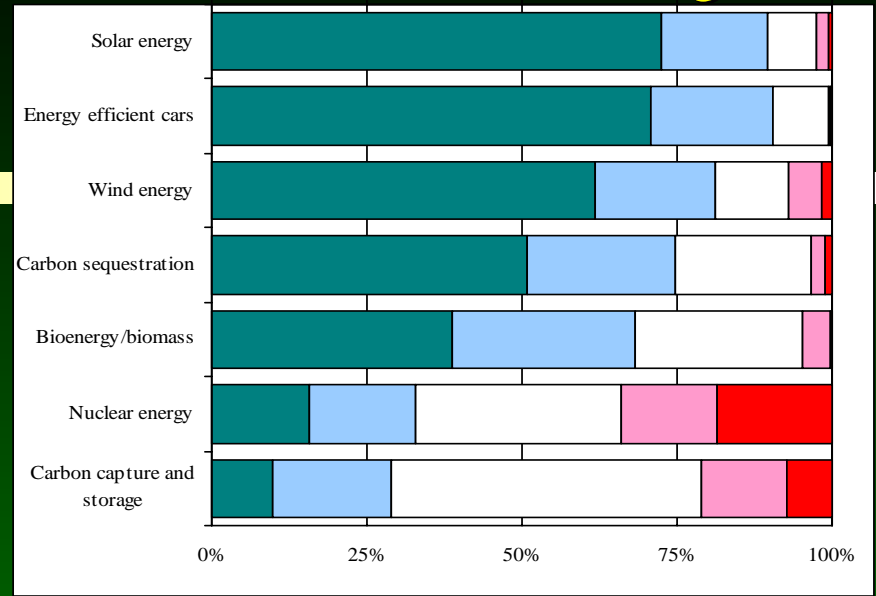
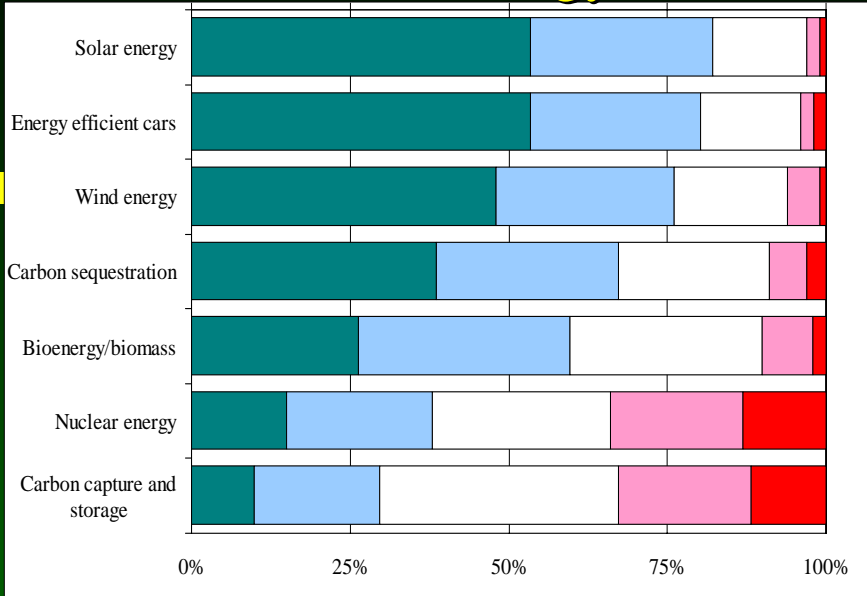
Top Two Priorities for National Energy Agency (e.g., DOE, DTI)



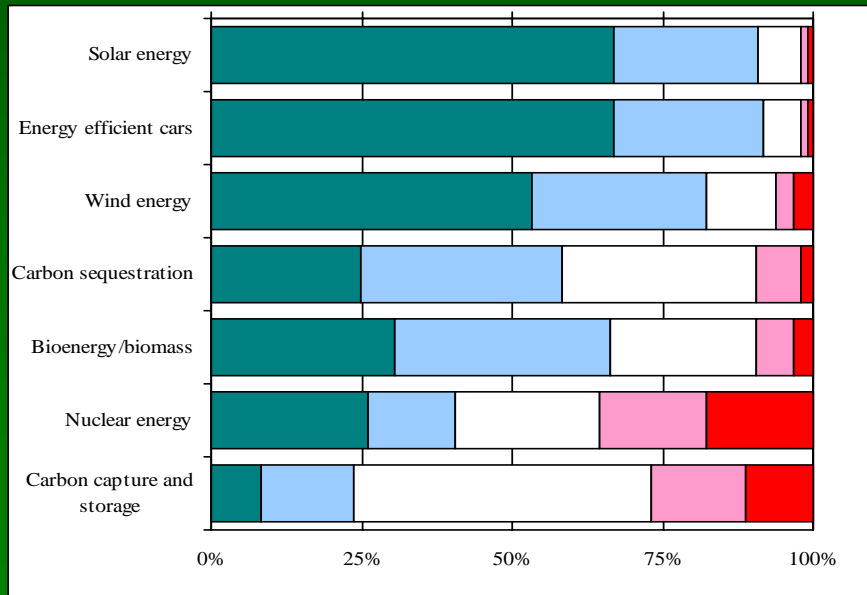
US

Preferred Energy Technology to Address Global Warming

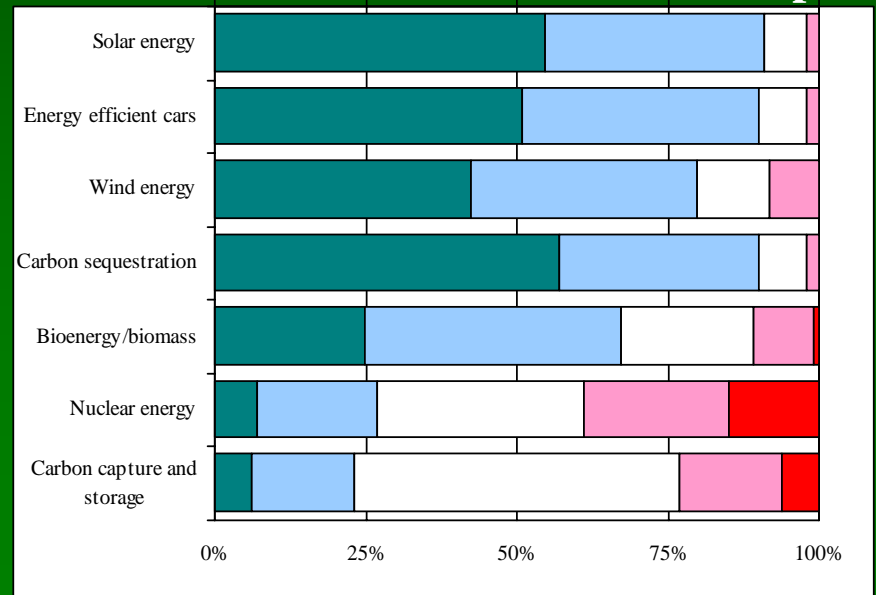
UK



Sweden

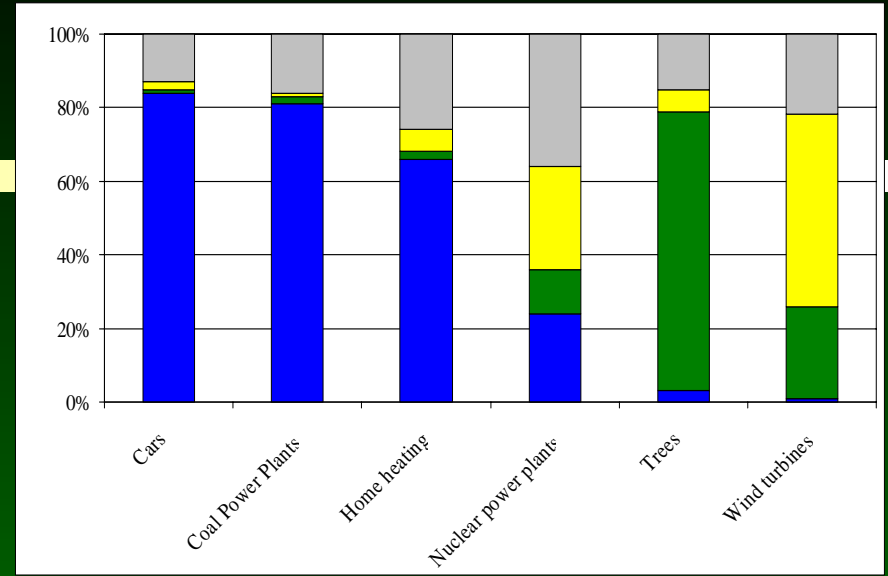
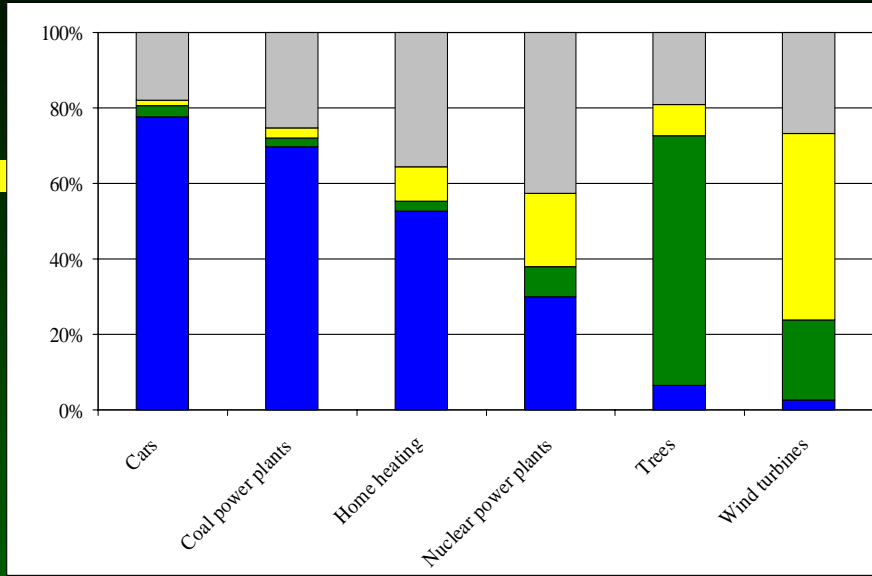


Japan

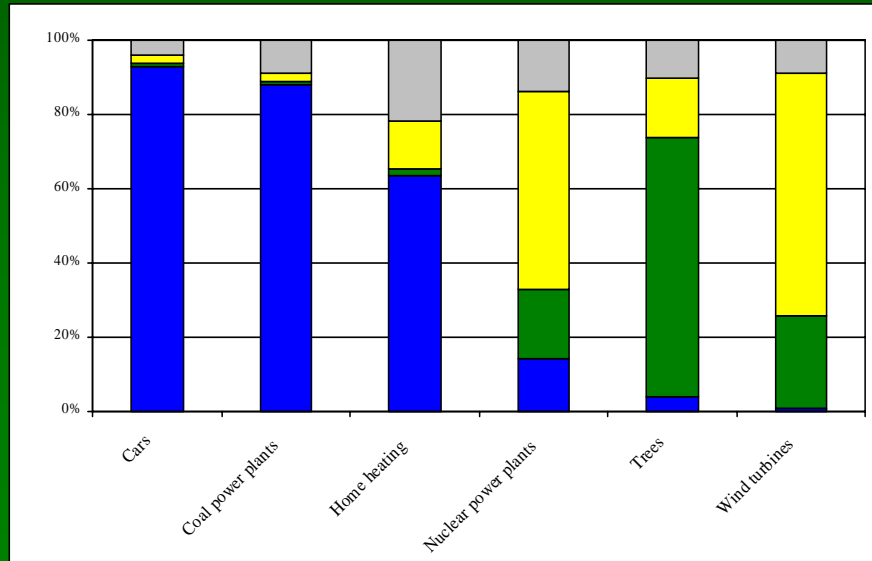


■ Definitely use
 ■ Probably use
 ■ Not sure
 ■ Probably not use
 ■ Definitely not use

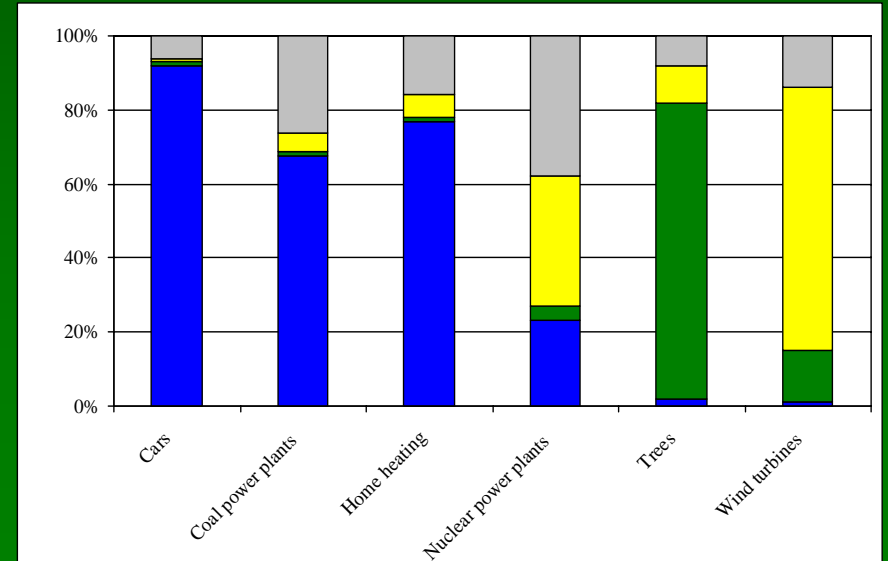
US How do the Following Contribute to Carbon Dioxide Levels? UK



Sweden



Japan



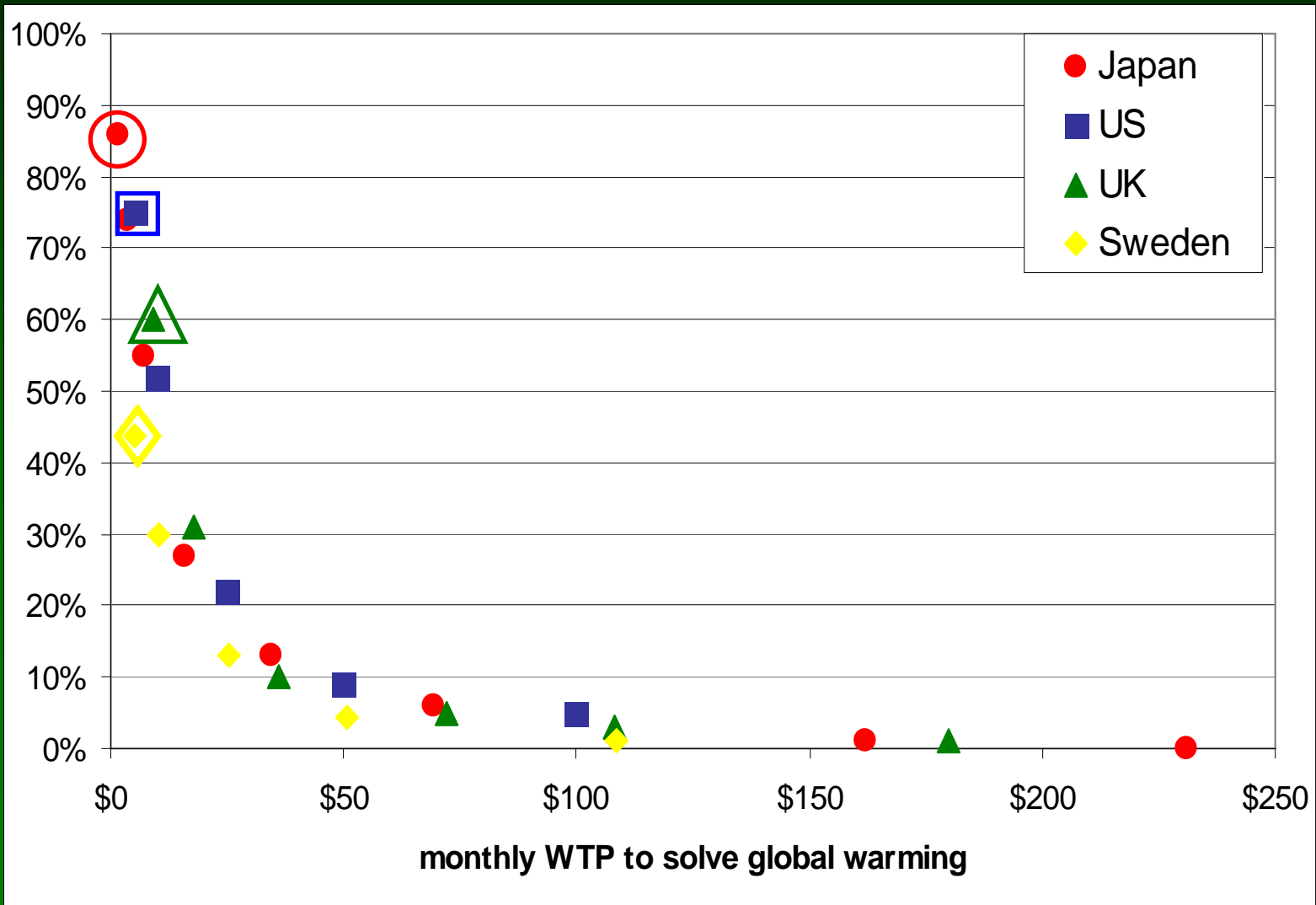
■ Increases
 ■ Decreases
 ■ No Effect
 ■ Not Sure

Does Nuclear Power Contribute Significantly to Global Warming?

	Yes	No		Yes	No
Belgium	48	27	Italy	42	22
Denmark	24	58	Holland	35	46
Germany	39	35	Austria	41	32
Greece	79	6	Portugal	59	10
Spain	64	9	Finland	28	54
France	57	26	Sweden	20	67
Ireland	61	11	UK	45	27
			EU15	47	27

Source: DG-Research, Special Eurobarometer 169, Energy: Issues, Options and Technologies Science and Society, December 2002, Table 5

WTP to Solve Global Warming



Conclusions

- Growing acceptance of climate science in US across all demographics, but notable gaps in knowledge remain
- Some notable differences across nations but given consistency in public attitudes & understandings, does not explain differences in national policies
- Level of knowledge affects behavior and ultimately erodes support for the difficult decisions that will be needed on climate change



Not One Public but Many Publics

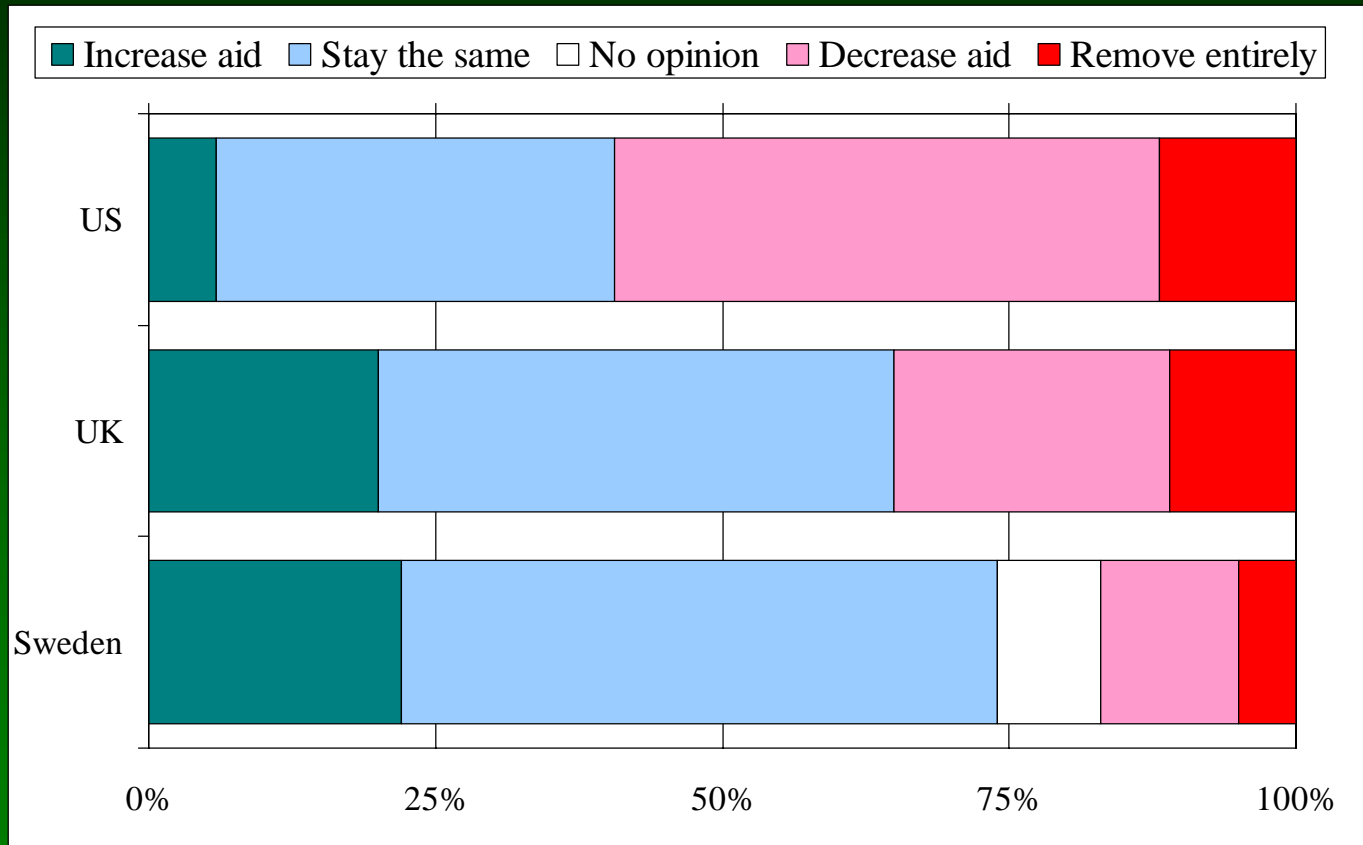
- The *attentive public* consists of those who:
 - (1) express a high level of interest in a particular issue
 - (2) feel very well informed about the issue; and
 - (3) read a newspaper on a daily basis, regularly read a news magazine or a magazine relevant to the issue
- The *interested public* consists of those who claim to have a high level of interest in a particular issue but do not feel very well informed about it
- The *residual public* consists of those who are neither interested in nor feel very well informed about a particular issue

Getting the Publics' Attention

[US]

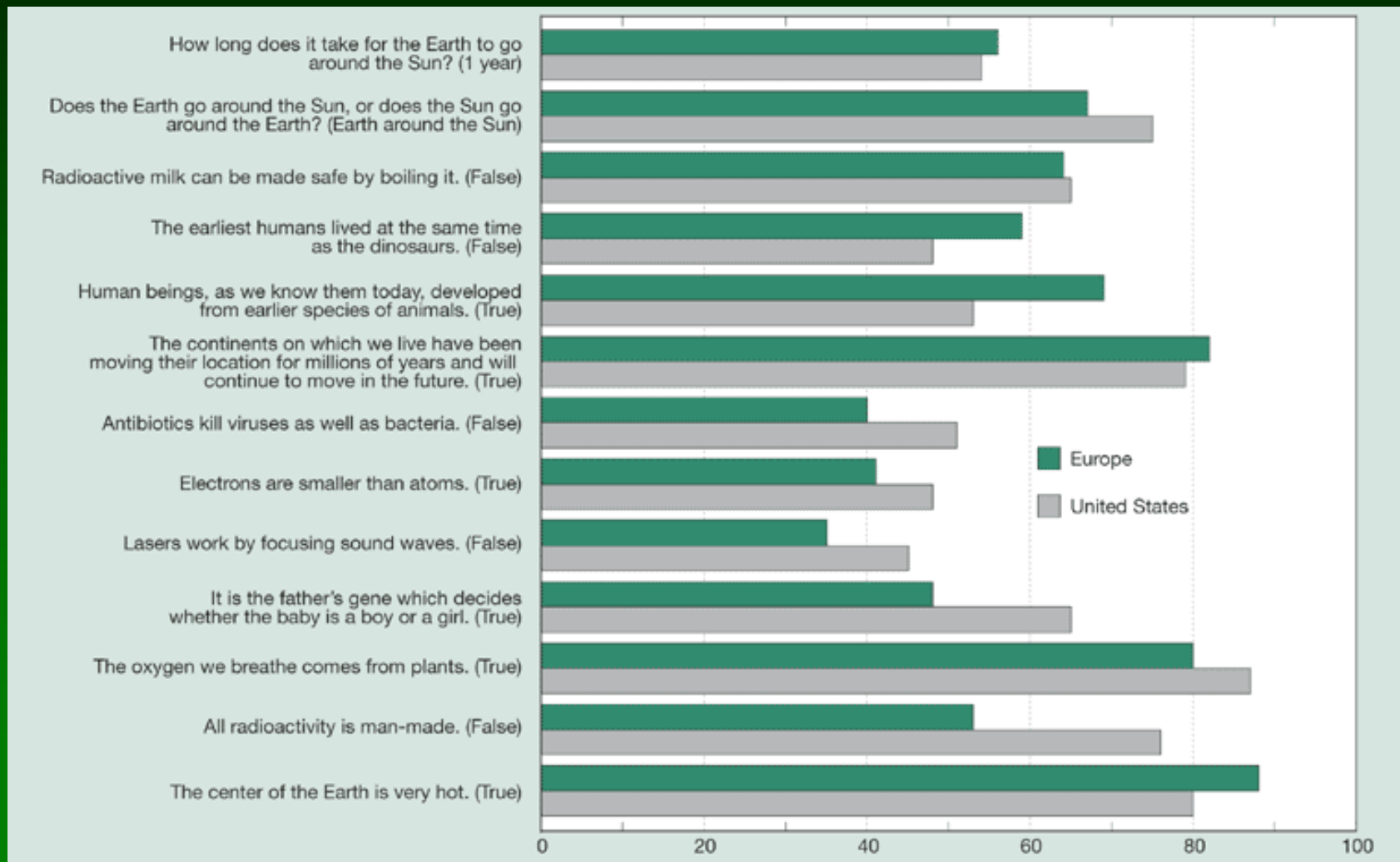
	AP	IP	RP
Local schools	31	28	41
Foreign policy	5	23	72
New scientific discoveries	7	39	53
The use of new inventions	6	36	58
Science and technology	10	48	42
Space exploration	5	21	74
New medical discoveries	14	51	35
Environmental pollution	10	38	52
Economic issues	12	33	55
Agriculture	6	23	71
Military/defense	7	31	62

Opinions regarding Foreign Aid



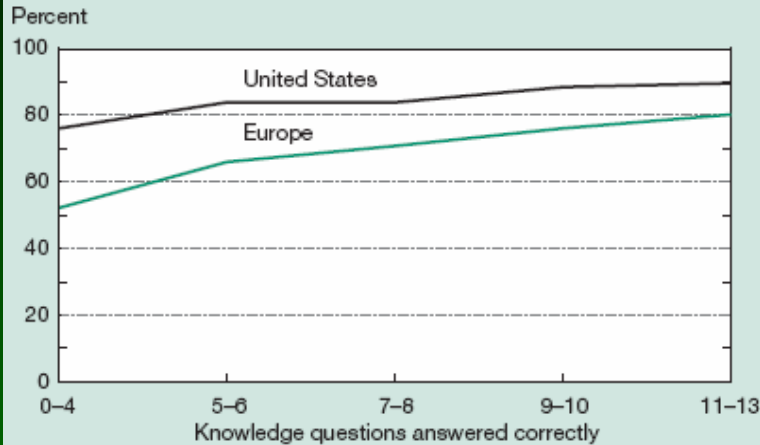
Public Understanding of S&T

[US vs EU]

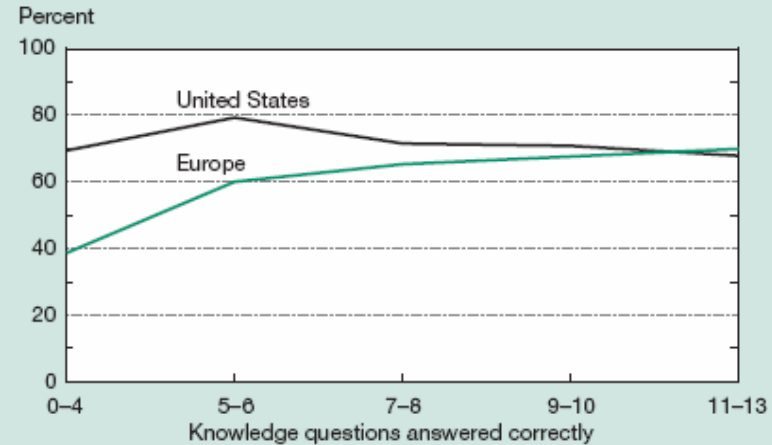


Relating Understanding to Trust

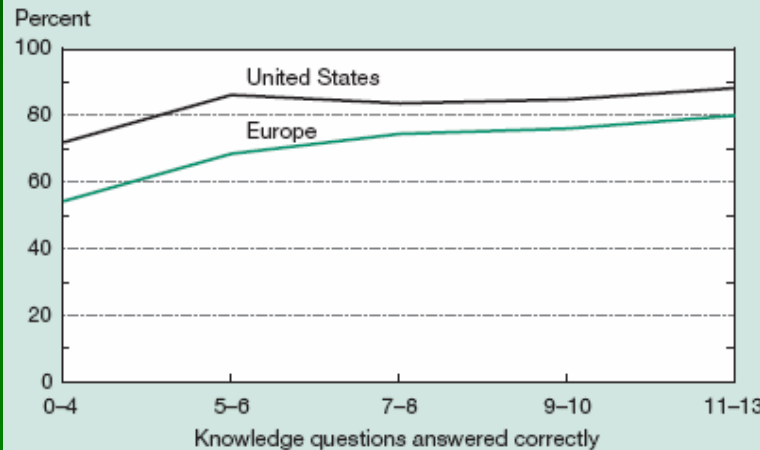
[US vs EU]



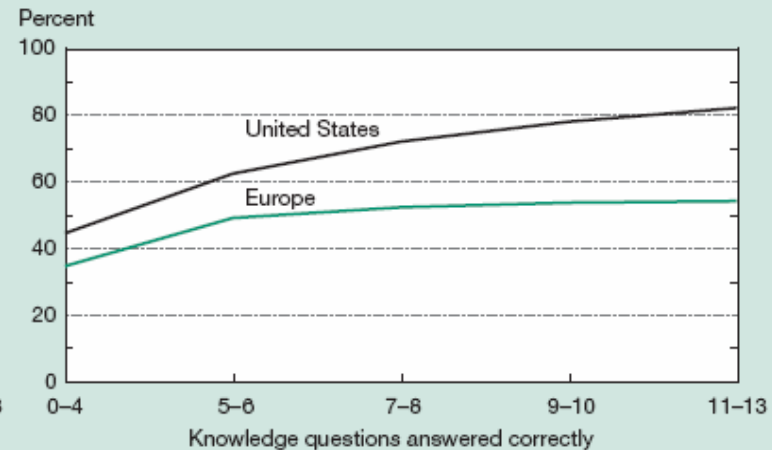
Agreement that "science and technology are making our lives healthier, easier, and more comfortable"



Agreement that "with the application of science and technology, work will become more interesting"

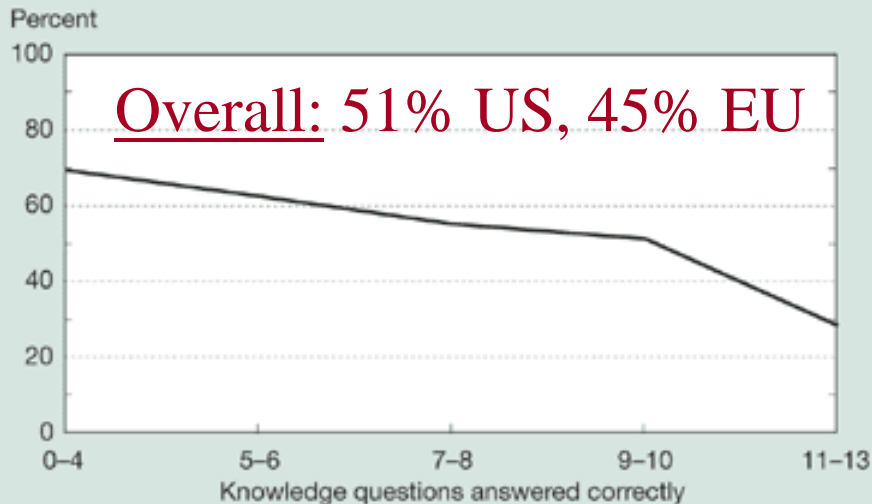


Agreement that "thanks to science and technology, there will be greater opportunities for future generations"

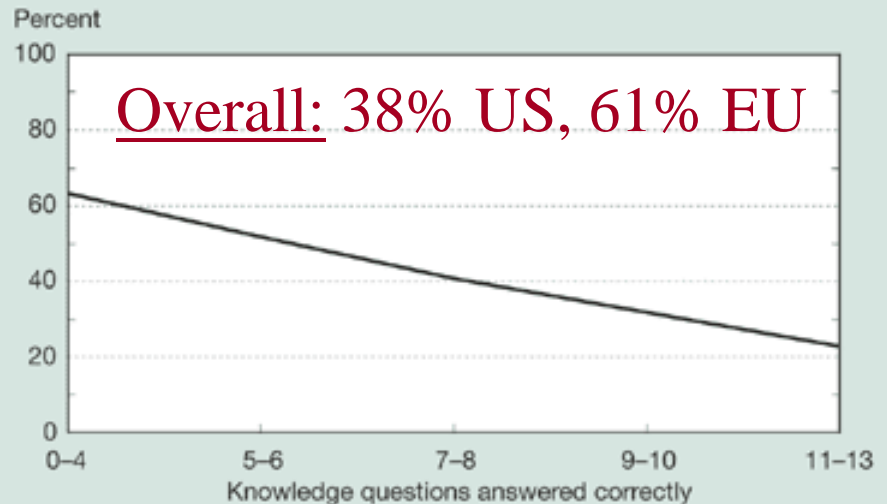


Agreement that "the benefits of scientific research outweigh any harmful results"

Science vs. Faith and Change



Agreement that "we depend too much on science and not enough on faith"



Agreement that "science makes our way of life change too fast"

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology, 2001.

EU Trust on Environmental Issues

