

Public Opinion on Climate Change Concerns, Policy Views, and Energy: Evidence from the European Social Survey*

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Background and Rationale

- Environmental Sociology
 - Environment-society reciprocity
- Observational data—the social world.
- Contextual embeddedness of human decisions and actions.
- Values, beliefs, norms, attitudes, and actions vary across many dimensions including people, places, and time.
- Objectivity and subjectivity.
- Climate change and energy views are prominent current examples.

What We Know About Climate Change

- General publics are to differing degrees concerned about climate change (CC).
- Substantial body of work on CC beliefs in the United States shows strong effect of political orientation
 - Hamilton 2008, 2011; McCright and Dunlap 2011, McCright et al. 2016
- Political divide also extends to other countries
- Australia (Tranter 2011, 2017), Canada (Young & Coutinho 2014), and the UK (Clements 2012a,b; Poortinga et al. 2011)

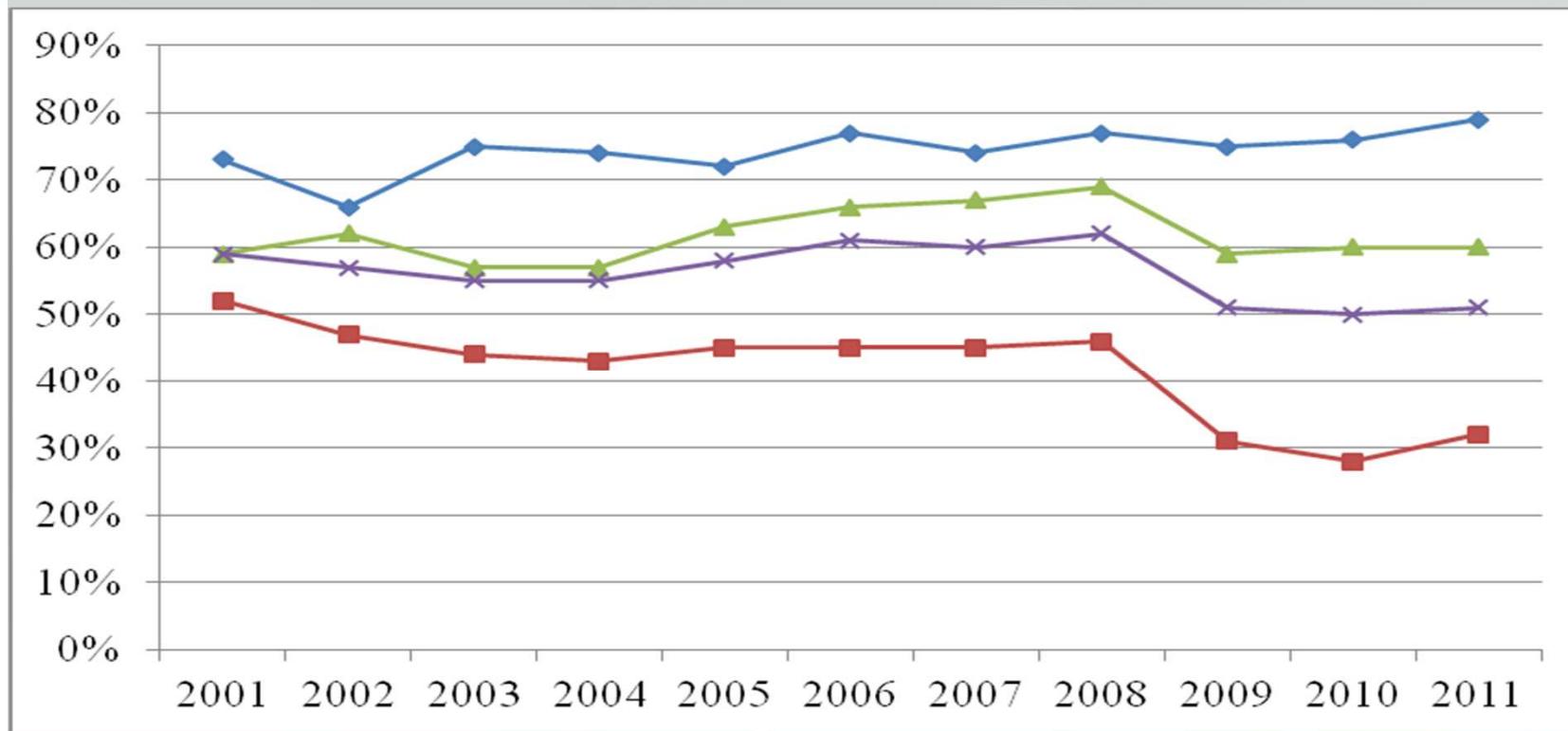


Fig. 1. Changes in U.S. public opinion on global warming over time, by political ideology and party identification. Note: Panel A displays ideological trends for liberals (diamonds), moderates (triangles), and conservatives (squares) in percentages responding that the effects of global warming "Have Already Begun to Happen." Aggregate percentages are represented by the cross trend line.

Marquart-Pyatt, S., A. McCright, T. Dietz, and R. Dunlap. 2014.
"Politics Eclipses Climate Extremes for Climate Change Perceptions."⁴
Global Environmental Change 29:246-257.

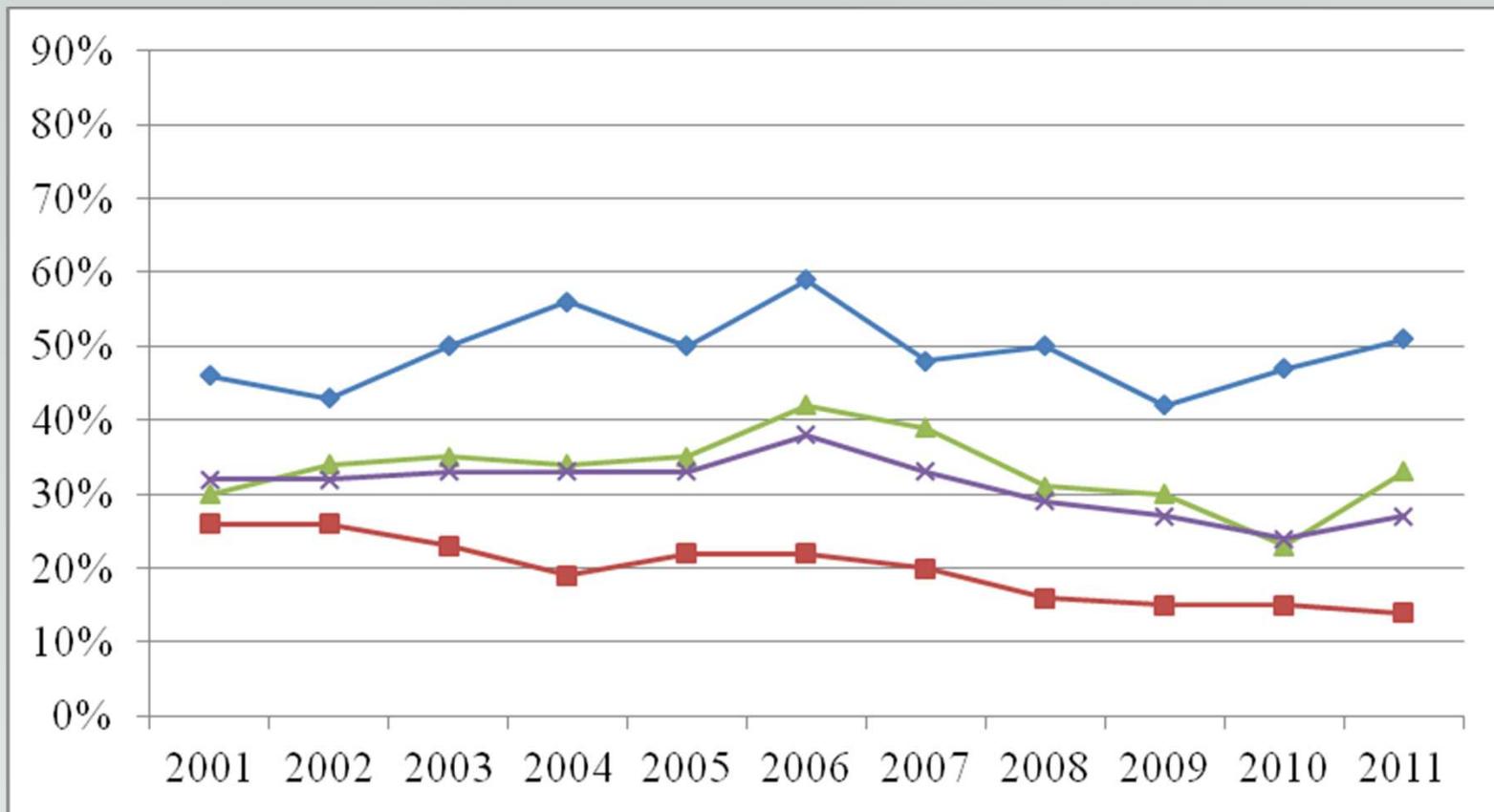


Fig. 1. Changes in U.S. public opinion on global warming over time, by political ideology and party identification. Note: Panel B displays the percentages (liberals (diamonds), moderates (triangles), and conservatives (squares)) responding that the seriousness of global warming in the news “Is Generally Underestimated.” Aggregate percentages are represented by the cross trend line.

Marquart-Pyatt, S., A. McCright, T. Dietz, and R. Dunlap. 2014.
“Politics Eclipses Climate Extremes for Climate Change Perceptions.”⁵
Global Environmental Change 29:246-257.

What We Know About Climate Change

- Cross-national studies
 - (Kvaloy et al. 2012; McCright et al. 2016; Tjernstrom and Tietenberg 2008; Tranter and Booth 2015)
- The political divide on climate change, which is quite large in the United States, is also visible in the United Kingdom, Australia, and a number of other nations.
- Its existence in the European Union is more complex, as the political divide on climate change is prevalent in Western European countries but less clear to non-existent in former State Socialist countries (McCright, Dunlap and Marquart-Pyatt 2016).

What We Know About Energy Views

- Less is known about how CC views are associated with energy-related attitudes and behavior.
- Studies reveal pro-climate views are related to support for energy conservation policies, support for renewable energy (and opposition to nonrenewables), pro-energy conservation behavioral intentions and actions.
 - Most are of the US general public (Bord et al. 2000; Leiserowitz 2006; McCright et al. 2013).
 - A few focus on the UK (Spence et al. 2011; Whitmarsh 2009).
 - Germany (Engels et al. 2013)

Research Question and Study's Purpose

- Does the political divide on climate change extend to energy views and actions?
- Twofold purpose:
- 1) to describe climate change and energy views across seventeen European nations using a WS regime perspective, and
- 2) to examine a model of energy views and personal energy-efficiency behavioral intentions and conservation actions comparatively and cross-nationally to determine its consistency.

European Union Context

- Progressive climate change policy, esp. relative to US.
- Prior work (McCright, Dunlap & Marquart-Pyatt 2016) reveals that for Western European nations, citizens on the right are less likely than those on the left to:
 - believe that anthropogenic climate change is occurring,
 - perceive CC to be a serious problem,
 - believe we should deal with climate change,
 - express a personal WTP to deal with CC,
 - support policies to reduce GHG emissions
- Absence of ideological divide in Former State Socialist countries.

Comparative Approach

- How can we improve research on the links between CC and energy policy views and actions?
- Essence of a comparative approach
 - Individual countries
 - Paired comparisons
 - Cross-national comparisons**
- Welfare State Regime Typology (Esping-Anderson 1990)
 - Based on inequality; social structural cleavages shape political attitudes and policy preferences

Data

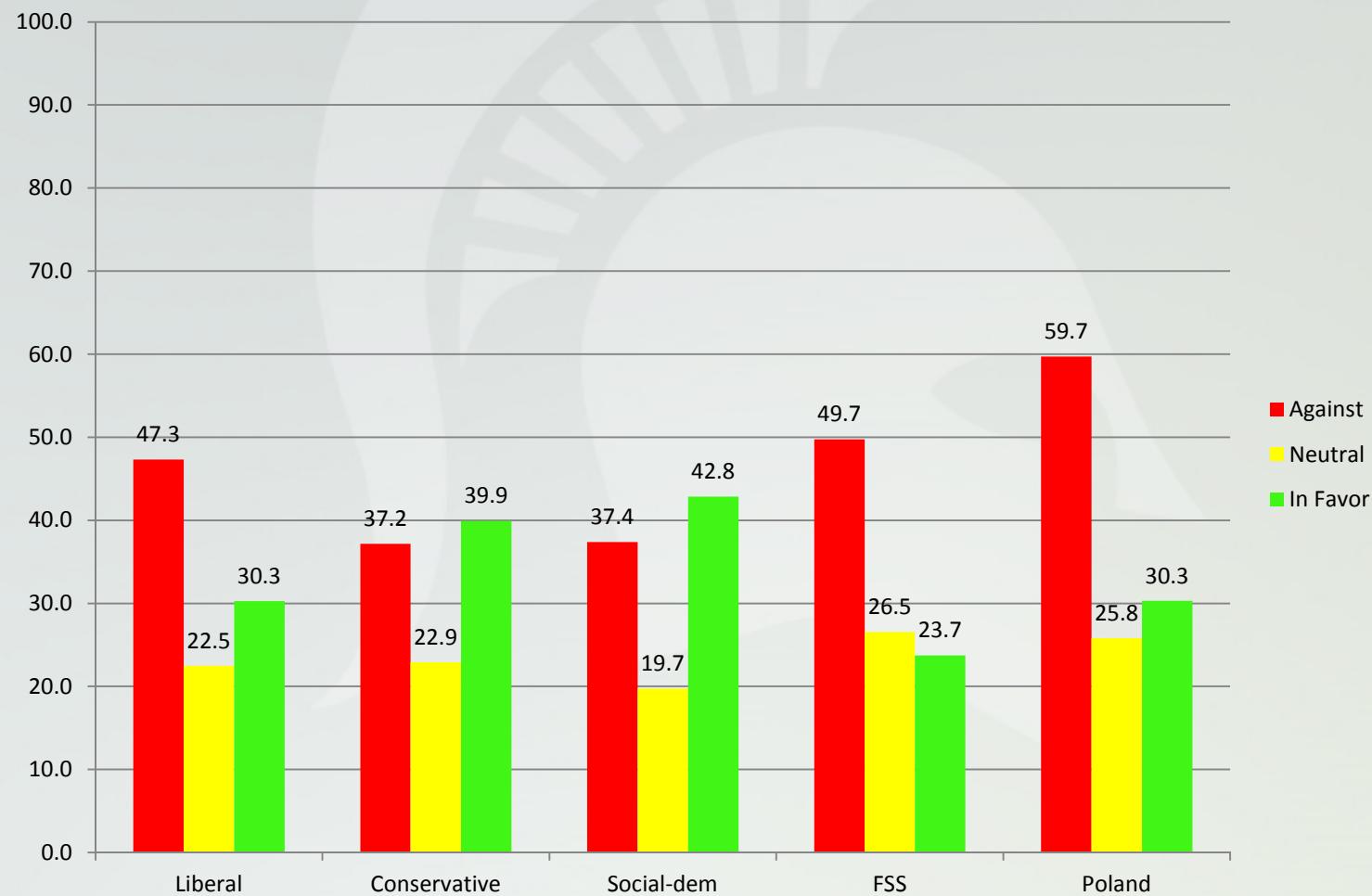
- ▶ European Social Survey 2016 Wave 8
- ▶ Multistage national probability samples
- ▶ 17 countries (sample sizes)
 - Austria (1939), Belgium (1701), Britain (1875), Bulgaria (855), Czech Republic (2116), Denmark (995), Estonia (800), Finland (1858), France (2001), Germany (2709), Iceland (2636), Ireland (2166), Netherlands (1635), Norway (1476), Poland (1571), Russia (2229), Slovenia (1244), Sweden (1506), Switzerland (1452)
- ▶ Comparative Framework & Model Building
 - ▶ How to incorporate latent constructs and place/space?

Welfare State Regime Groups

- Liberal: Iceland, Ireland, Great Britain
- Conservative: Finland, France, Germany, Switzerland.
- Social-Democratic: Austria, Belgium, Netherlands, Norway, Sweden.
- Former State Socialist (FSS)/Eastern: Czech Republic, Estonia, Poland, Russia, Slovenia.

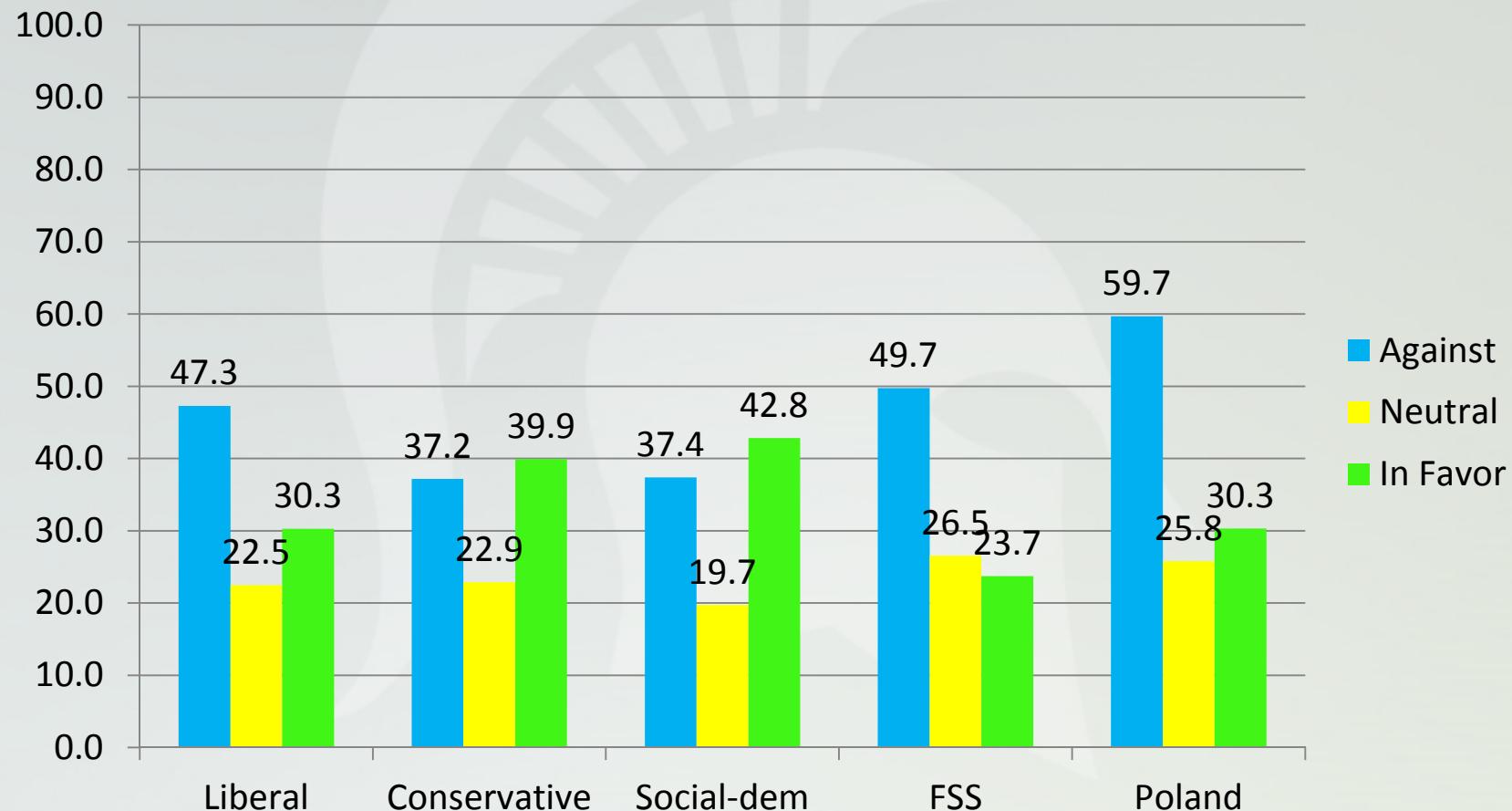
To what extent are you in favour or against the following policies in [country] to reduce climate change?

...increasing taxes on fossil fuels, such as oil, gas and coal



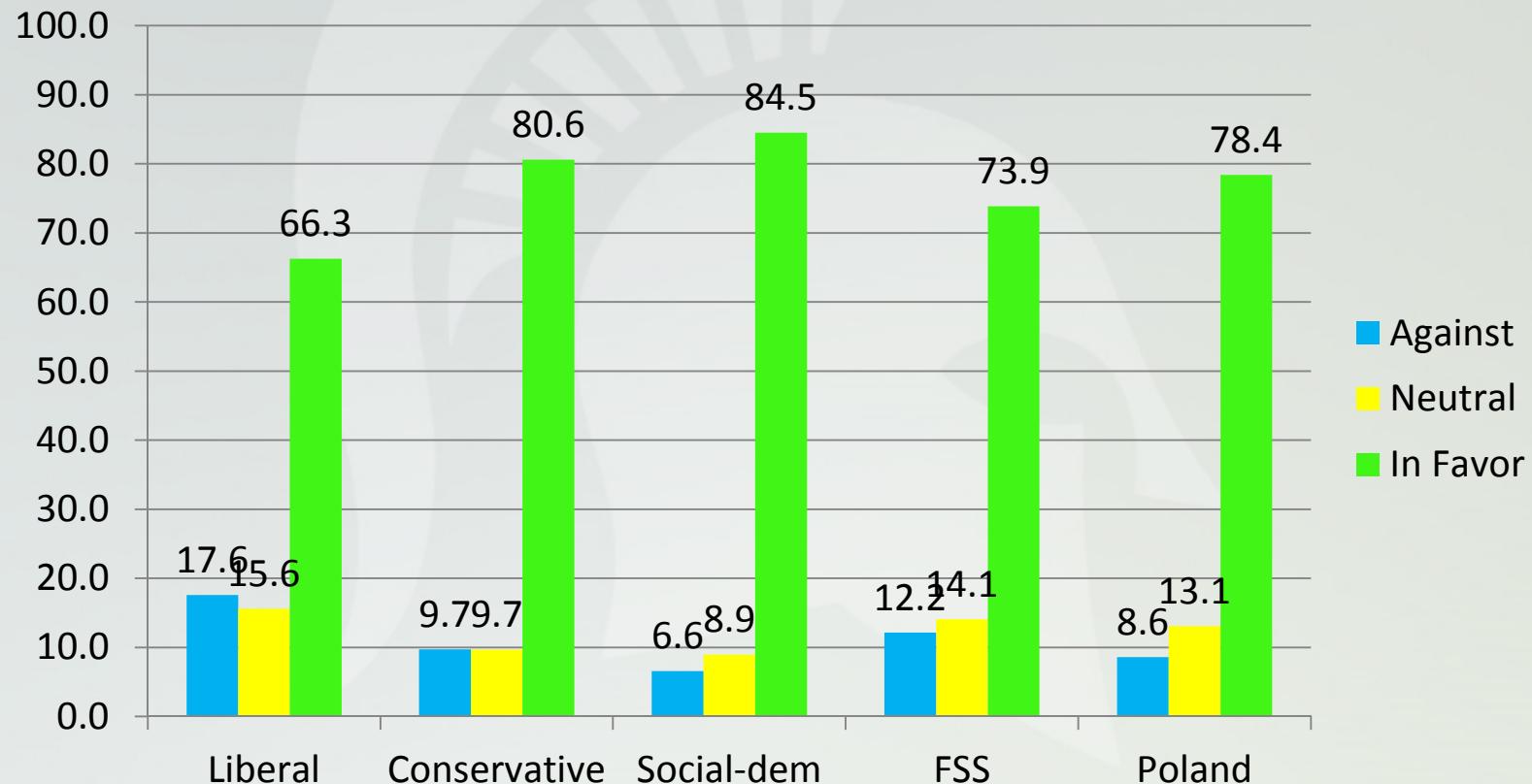
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...increasing taxes on fossil fuels, such as oil, gas and coal



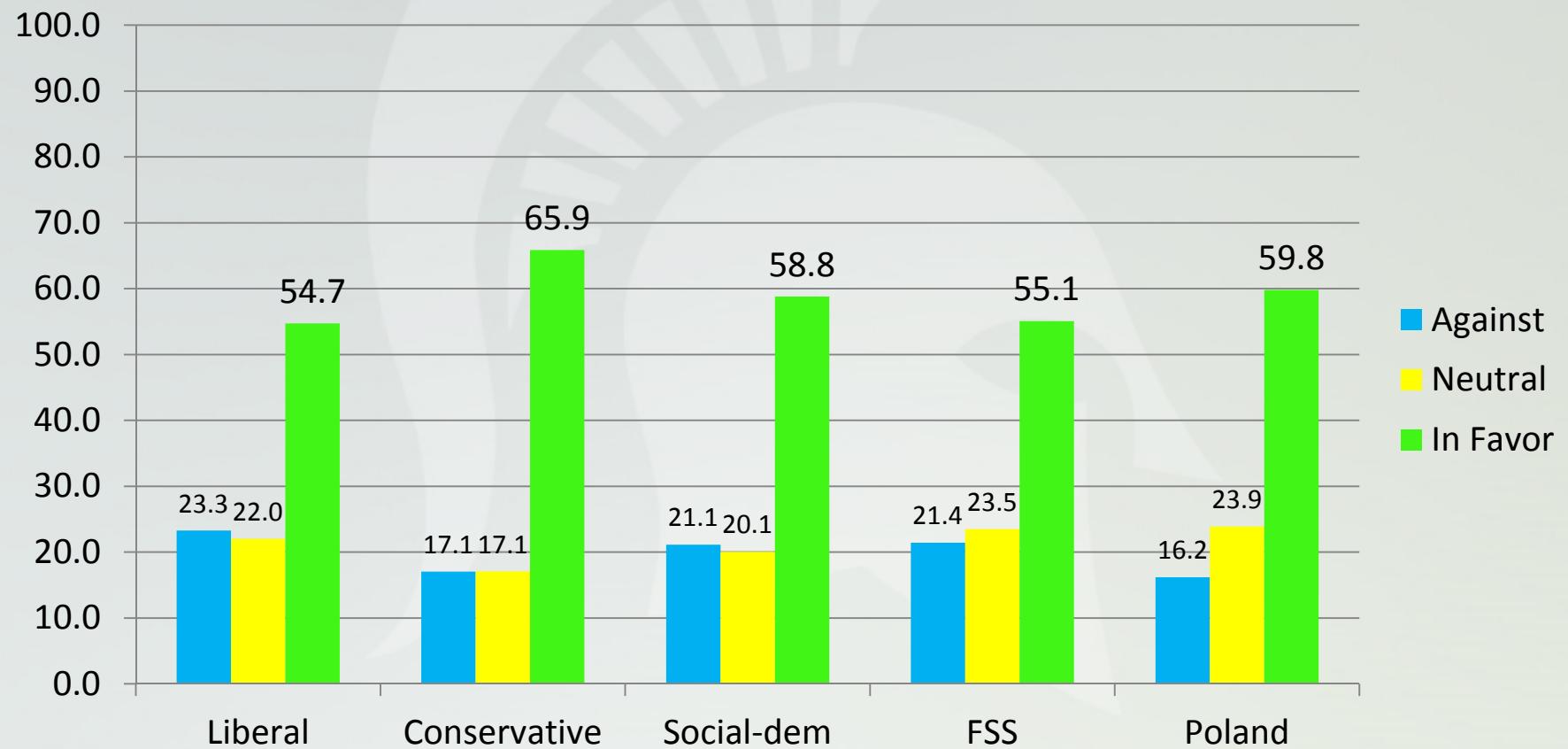
To what extent are you in favour or against the following policies in [country] to reduce climate change?

...using public money to subsidise renewable energy such as wind and solar power

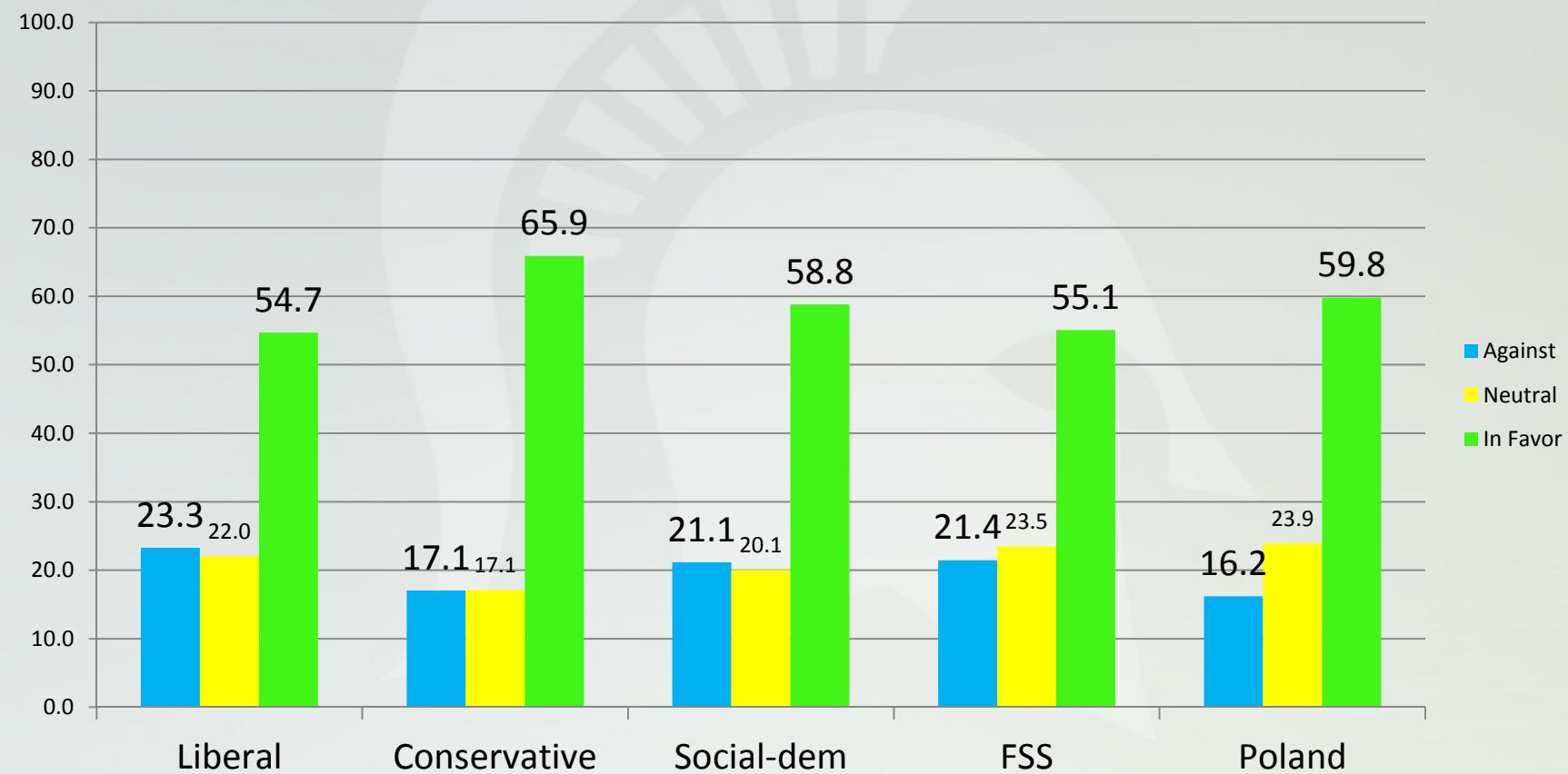


To what extent are you in favour or against the following policies in [country] to reduce climate change?

...a law banning the sale of the least energy efficient household appliances

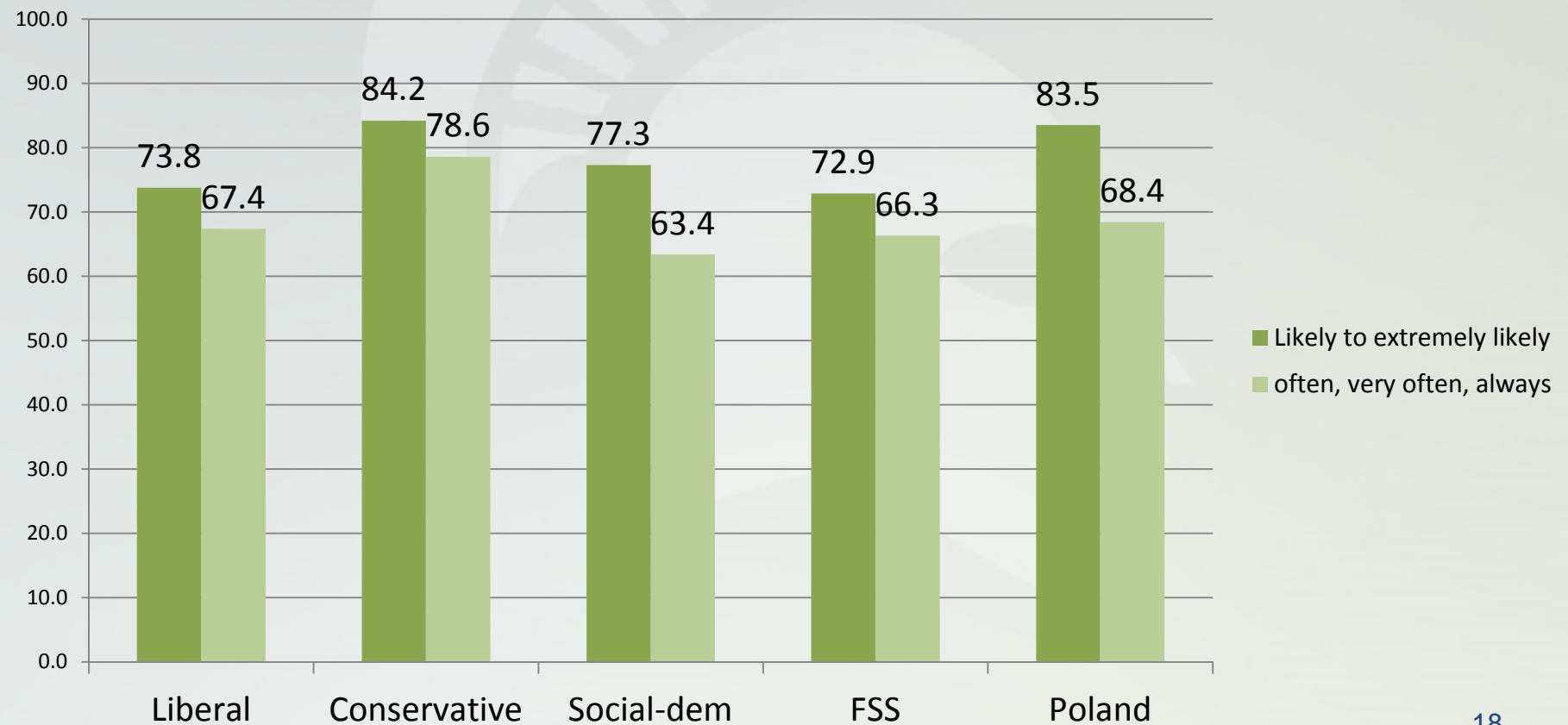


If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?
...not at all likely to extremely likely



If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?
...not at all likely to extremely likely

There are some things that can be done to reduce energy use, such as switching off appliances that are not being used, walking for short journeys, or only using the heating or air conditioning when really needed. In your daily life, how often do you do things to reduce your energy use?

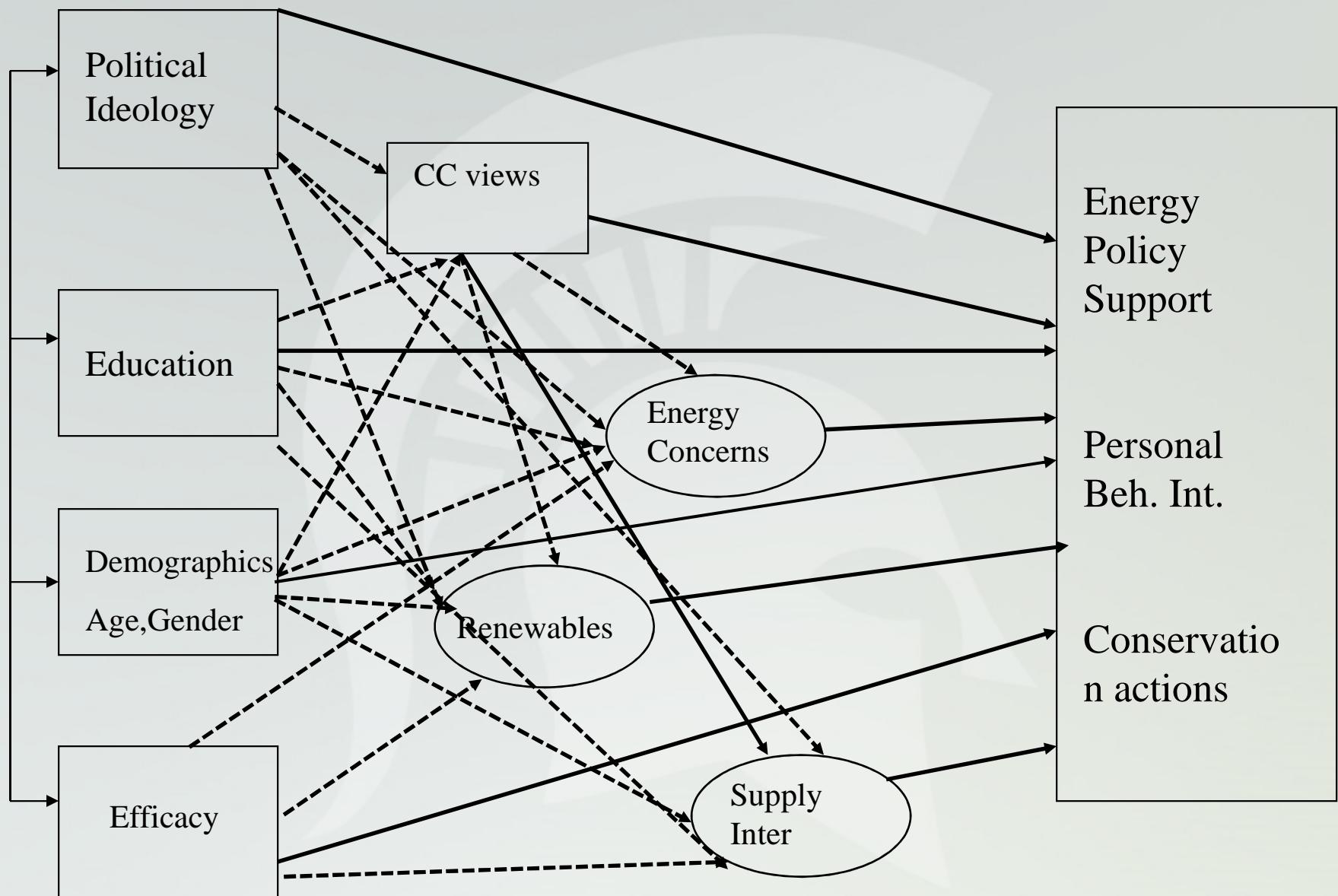


Analytical technique

- ▶ Structural equation modeling with latent variables (SEMLV)
 - Latent constructs:
 - Renewable energy, energy concerns, supply interruptions
- Why SEMLV?
- Few studies use it for climate change and energy views.
 - cites
- Validity and reliability: estimated comprehensively
- Multiple indicators of a construct.
- Measurement error can be included, allowed to correlate and used theoretically.
- Estimate relations using path models.

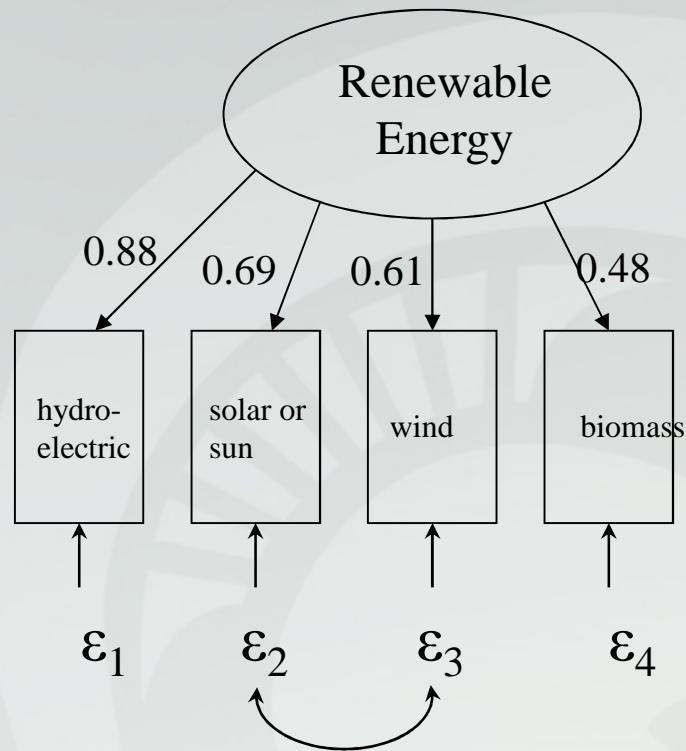
Empirical Model

- Outcome Measures (3)
 - Policy Views (3 item scale)
 - Personal Behavioral Intentions (EE appliance purchase)
 - Personal Conservation Actions
- Climate Change Views
- Political Ideology
- Use of renewables
- Energy concerns
- Energy supply interruptions
- Personal efficacy
- Education
- Age, Gender



Survey Items in Latent Constructs

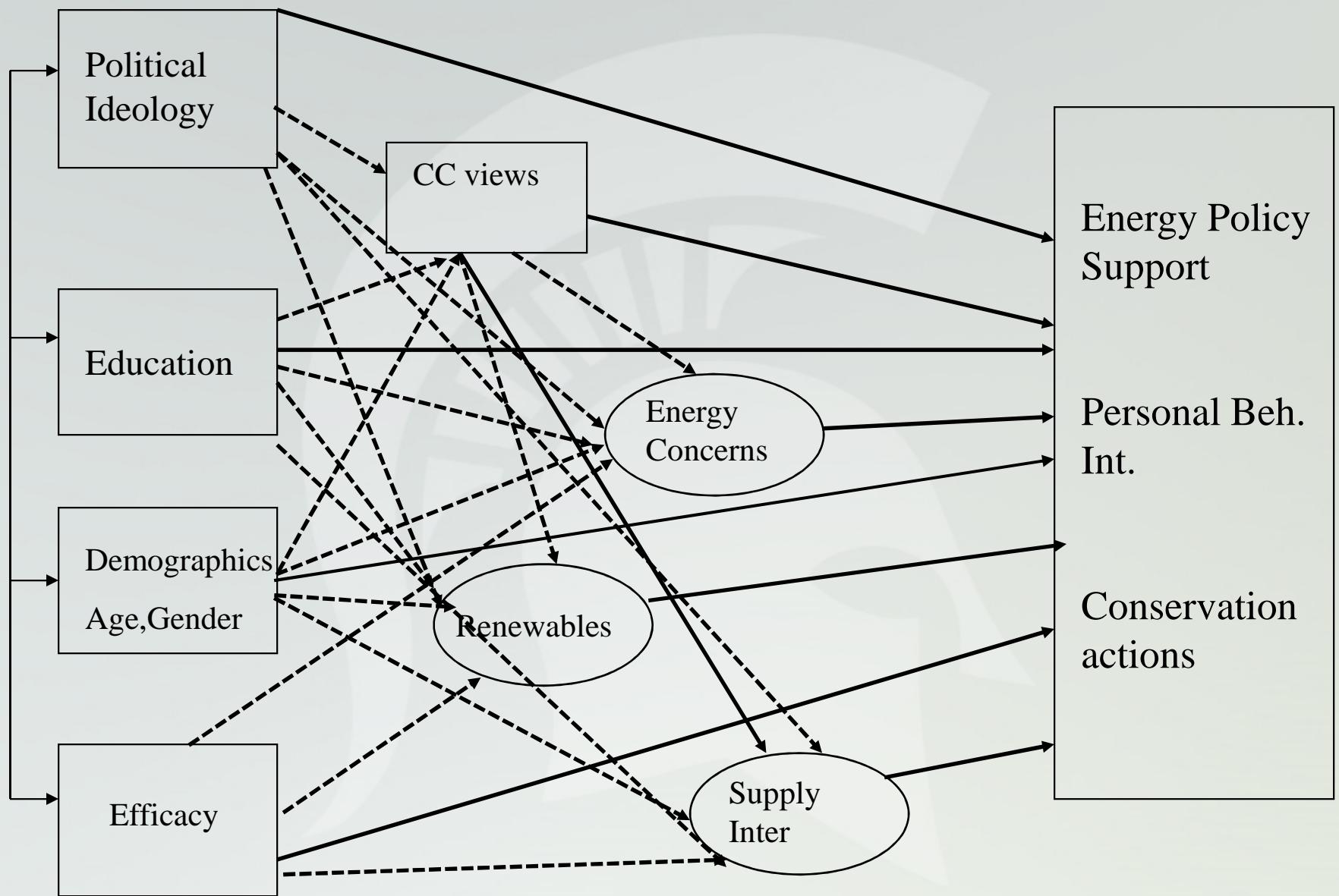
- Renewable Energy Supply Beliefs
 - About how much of the electricity used should be generated from:
 - hydroelectric power generated by flowing water from rivers, etc.
 - the sun or solar power
 - wind power
 - biomass energy generated from materials like, wood, plants, etc.
- Energy concerns
 - How worried are you that:
 - there may be power cuts in [country],
 - energy may be too expensive for many people in [country]
 - [country] being too dependent on energy imports from other countries
 - [country] being too dependent on using energy generated by fossil fuels such as oil, gas and coal
- Energy supply interruptions
 - natural disasters or extreme weather, insufficient power being generated, technical failures, terrorist attacks.



Chi-Square: 15.968, p<.067 CFI & IFI: 0.98 AGFI:0.98 RMSEA: .01 (.00, .04) (N=32905)

Note: Factor loadings are presented as standardized values for the model pooled.

Measurement Model or Latent Construct of Renewable Energy Beliefs



Energy Policy

Support Results Liberal Social dem Conserv. FSS

| | Liberal | Social dem | Conserv. | FSS |
|-------------------|----------------|-----------------|-----------------|----------------|
| CC views | 0.111** | 0.150** | 0.085** | 0.131** |
| Pol Ideology | 0.052** | 0.086** | 0.026* | 0.011 |
| Use of renewables | 0.251** | 0.251** | 0.423** | 0.217** |
| Energy concerns | 0.033* | 0.027* | 0.014 | 0.050** |
| Energy supply | 0.076** | -0.064** | -0.106** | -0.016 |
| Personal efficacy | 0.198** | 0.214** | 0.126** | 0.143** |
| Education | 0.139** | 0.128** | 0.104** | 0.008 |
| Gender | -0.012 | 0.019 | -0.012 | 0.054** |
| Age | 0.046** | 0.068** | 0.134** | 0.013 |
| Adj R2 | 0.218 | 0.202 | 0.204 | 0.179 |

Standardized coefficients; p<.05*, p<.01**

Personal EE

Beh Int Results Liberal Social dem Conserv. FSS

| | | | | |
|--------------------------|-----------------|----------------|-----------------|----------------|
| CC views | 0.032* | 0.014 | -0.047** | 0.071** |
| Pol Ideology | 0.032* | 0.007 | 0.040** | 0.029 |
| Use of renewables | 0.138** | 0.264** | 0.349** | 0.145** |
| Energy concerns | 0.122** | 0.134** | 0.143** | 0.064** |
| Energy supply | -0.049** | -0.012 | -0.106** | -0.027* |
| Personal efficacy | 0.178** | 0.157** | 0.160** | 0.157** |
| Education | 0.045** | 0.053** | 0.073** | 0.065** |
| Gender | 0.039** | 0.018 | 0.038** | -0.002 |
| Age | 0.209** | 0.230** | 0.268** | 0.085** |
| Adj R2 | 0.201 | 0.218 | 0.214 | 0.183 |

Standardized coefficients; p<.05*, p<.01**

| Personal Conserv. | | | | |
|-------------------|-----------------|----------------|-----------------|-----------------|
| Actions Results | Liberal | Social dem | Conserv. | FSS |
| CC views | 0.029* | 0.001 | -0.060** | 0.075** |
| Pol Ideology | 0.005 | -0.017 | -0.015 | -0.017 |
| Use of renewables | 0.125** | 0.193** | 0.263** | 0.136** |
| Energy concerns | 0.232** | 0.156** | 0.135** | 0.132** |
| Energy supply | -0.056** | 0.010 | -0.055** | -0.052** |
| Personal efficacy | 0.058** | 0.171** | 0.202** | 0.106** |
| Education | 0.040** | 0.060** | 0.052** | 0.017 |
| Gender | 0.015 | 0.017 | 0.023* | 0.043** |
| Age | 0.092** | 0.192** | 0.240** | 0.220** |
| Adj R2 | 0.198 | 0.214 | 0.208 | 0.177 |

Standardized coefficients; p<.05*, p<.01**

Results Summary

- CC views affect energy views all 4 WS for progressive energy policy support views
- CC views affect personal beh intentions and actions for 3 of 4 WS regimes
 - Liberal & FSS; Conservative
- Renewable energy views affect policy views, personal energy beh intentions & conservation actions across all 4 WS regime types

Results Summary

- Energy supply concerns also consistent across 4 WS regimes and 3 outcomes.
- Political ideology has no effect on energy-related outcome variables in FSS.
- Ideology does affect progressive energy policy views in 3 of 4 WS types and beh intentions in 2 WS
- Personal efficacy shapes all 3 outcome variables.
- Consistent effects for gender, age, and education.

Motivations for Future Work

- Understanding variability within WS regime types.
- Spatial and temporal variability.
- Will the United States continue to be an outlier?
- Climate skepticism and denial have energy parallels?
- Replicate questions from ESS in other countries and at additional time points.
 - Human and natural causes of CC
 - Energy source, supply, and subsidies

What's on the horizon?

- Identifying patterns and discontinuities
 - Individual country analyses for all 17 countries
 - Closer look all items in the current analyses
- Determining the relevant environmental factors
 - Bring in ecological/climate data
- Contextual embeddedness
 - Country, region, subnational/community
- Moving from understanding to prediction requires additional data gathering.

What's on the horizon?

- What are the relevant social & political attitudes and actions with which to compare environmental views (CC, energy)?
 - Democratic values
 - Trust, Views of the state
 - Environmental views and activism
 - Political activism
- More data
- Monitoring change in CC and energy views, behavioral intentions and actions
 - Questions
 - Substantive Topics

Challenges: The Road Ahead

- ▶ Environmental views are complex, at times declining (in the case of activism), sometimes leveling off, and increasing.
- ▶ We need more (and continually improving) public opinion data!!
 - ▶ All world regions; longitudinal
- ▶ Combining data sources
- ▶ How does and should CC and energy views link with other environmental concerns?
 - ▶ Activism, Risk perceptions, Trust
- ▶ Embeddedness or contexts, like political structures
- ▶ How we think about comparisons: across place and/or over time



Thank you! Comments and questions?

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Bonus Slides

Model building using SEMLV

- Pooled Models, Models by Country, Year (2017, ...)
- Measurement or Confirmatory Factor Models for 3 (6) Latent Variables
 - Renewable energy
 - Energy concerns
 - Supply interruption
- Multiple Group Analysis
 - Comparing across countries
- Full structural equation models

Analytical techniques

► Multilevel modeling

- hierarchical data structures are common
- The individual and the context are distinct sources of variability
- “...many theories and hypotheses...often hinge on the presumption that ‘something’ observed at one level is related to ‘something’ observed at another level.”
~Steenbergen and Jones 2002
- Individuals nested within countries
- XX% of variation in CC and energy views (ICC)