Social Science Perspectives on Carbon

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Section 2 of SOCCR-2:
Human Dimensions of the Carbon Cycle

- ***Chapter 3: Energy Systems***
- ***Chapter 4: Understand Urban Carbon Fluxes***
- ***Chapter 5: Agriculture (April 16th Seminar)***
- ***Chapter 6: Social Science Perspectives on Carbon***
- ***Chapter 7: Tribal Lands (April 23rd Seminar)***

My Background and Experience

- ***Human Choice and Climate Change (4 vols., 1998)***
- ***Climate change and argumentation***
- ***Climate change and national security***
- ***Climate change and demography***
- ***Climate change and energy efficiency/use***

Spoiler Alert: What You Won’t See in This Presentation

- ***Graphs***
- ***Charts***
- ***Oceans, Forests, Wetlands, Soils***
- ***Precise Measurements***
- ***Almost nothing about the carbon cycle***

Two Framings of Research Relevant to the Carbon Cycle

Framing starting with the carbon cycle (CC):
Global CC**/**Fluxes→Regional CC**/**Fluxes→Emissions by Sector→Social "Drivers"

Framing starting with people (this chapter):
Social Structures**/**Processes (SS**/**P)→Carbon Content of SS**/**P→Feasible Changes

Beyond questions about whether climate change is "real" and what specific impacts will be are questions about human change/choices.

- Why and how do people change how they live and arrange their lives where they live—individuals, households, employees and workplaces, governance organizations, etc.?

- What is the climate/carbon dimension of these human arrangements?

Relevant Social Scientific Research

Behavioral research explores connections among motivations, intentions, and actors at individual, institutional, and organizational levels.

Governance research provides insights into why and how policy-environmental decisions are made and implemented through both informal and formal processes.

Scenarios of the future connect carbon emissions to their socioeconomic contexts and social consequences.

Vulnerability assessments specify who will be harmed by climate change, what the harm could be, and where interventions can be made.

Socioecological research uses a systems perspective to demonstrate linkages among hazards and social vulnerabilities/risks.

Sociotechnical transitions research illuminates how actors, artifacts, and processes shape and reshape each other.

Social networks research maps connections among people, showing potential change pathways and roadblocks.

Social practice research reveal configurations that produce emissions but also support valued or locked-in ways of life.

Two Examples of Complementary Framings

Descriptive approach	Interpretive approach
Productivity/yield	Farmers' willingness to grow biomass crops (not food)
Economic viability	Public tolerance of unsightly plantations
Weed control, other management	Priorities for water use and land use
Amount of fossil fuel combustion displaced	Labor-shift hardships on workers and families
Cost of harvesting	Cultural effects of reduced biodiversity
Investment potential	Preferences for other available technologies
Increased soil erosion	
Loss of biodiversity	
Net reduction in greenhouse gas emissions	

Science research recommends	What people's priority concerns are
Care about the planet	Get through the day
Become vegetarians	Stay well
Buy energy efficient products	Hold a good job or jobs
Install solar panels or other renewable energy-producing equipment	Live in a good home
Require emissions reductions	Have fulfilling family life and work/life balance
Walk or bike to work	Meet monthly expenses, maybe save
Reduce "carbon footprints"	Be safe, both selves and kids
Fly less or not at all	Have good schools
Compost, recycle, reuse	Be near shops, entertainment, other amenities
Move out of/don't buy homes and businesses in floodplains or on coasts	

What Could We Learn? (a partial list)

How carbon is embedded in everyday life but is largely invisible
How everyday life is made up of social practices and structures
How people really decide to change
That cost motivations are relatively unimportant
That consumers often make “irrational” decisions
That energy-using activity patterns are shared within groups
That groups vary in their patterns, across populations, & over time
That “market transformation” needs to include upstream actors
That building and equipment codes and standards matter
That ideal users seldom exist (so find out what they actually do)
That integrated models help to find democratic, effective paths
That scenarios should include broadly desirable futures
How understanding of “governance” must be enlarged
How to integrate technical and social systems analyses

Urban/Social Research Integration Potential

***Key Finding #4, Chapter 6*—Research that examines governance at multiple formal levels (international, national, state/province, cities, other communities) as well as informal processes will identify overlaps and gaps and deepen understanding of effective processes and opportunities involved in carbon management, including a focus on benefits such as health, traffic management, agricultural sustainability, and reduced inequality.**

***Key Finding #4, Chapter 4*—Improvements in air quality and human health and the reduction of the urban heat island are important co-benefits of urban carbon emissions mitigation**

***Key Finding #6, Chapter 4*—Urban areas are important sites for policymaking and decision making that shape carbon fluxes and mitigation. However, cities also are constrained by other levels of government, variations in their sources of authority and autonomy, capacity, competing local priorities, and available fiscal resources**

Energy/Social Research Integration Potential

Key Finding #3, Chapter 6—Opportunities to go beyond a narrow focus on the energy-efficiency industry to recognize and account for the social nature of energy use include (1) engaging in market transformation activities aimed at upstream actors and organizations in supply chains, (2) implementing efficiency codes and standards for buildings and technologies, (3) conducting research to understand how people's behaviors socially vary and place different loads on even the most efficient energy-using equipment, and (4) adding consideration of what people actually do with energy-using equipment to plans for technology and efficiency improvements.

Key Finding #3, Chapter 3—The shifts in North American energy use and CO2e emissions have been driven by factors such as (1) lower energy use …; but increasingly due to (2) greater energy efficiency … Further factors driving lower carbon intensities include (3) increased renewable energy production …; (4) a shift to natural gas from coal sources for industrial and electricity production); and (5) a wide range of new technologies, including, for example, alternative fuel vehicles.

Key Finding #1

***Broadened Approaches*—A range of social scientific research approaches, including people-centered analyses of energy use, governance, vulnerability, scenarios, social-ecological systems, sociotechnical transitions, social networks, and social practices, complements physical science research and informs decision making. Approaches that are people centered and multidisciplinary emphasize that carbon-relevant decisions are often not about energy, transportation, infrastructure, or agriculture, as such, but rather about style, daily living, comfort, convenience, health, and other priorities.**

Key Finding #2

***Assumed versus Actual Choices*—Planners have assumed economically rational energy-use and consumption behaviors and thus have failed to predict actual choices, behaviors, and intervening developments, leading to large gaps between predicted rates of economically attractive purchases of technologies with lower carbon footprints and actual realized purchase rates.**

Key Finding #3

***Social Nature of Energy Use*—Opportunities to go beyond a narrow focus on the energy-efficiency industry to recognize and account for the social nature of energy use include**

(1) engaging in market transformation activities aimed at upstream actors and organizations in supply chains

(2) implementing efficiency codes and standards for buildings and technologies

(3) conducting research to understand how people's behaviors socially vary and place different loads on even the most efficient energy-using equipment

(4) adding consideration of what people actually do with energy-using equipment to plans for technology and efficiency improvements.

Key Finding #4

***Governance Systems*—Research that examines governance at multiple formal levels (international, national, state/province, cities, other communities) as well as informal processes will identify overlaps and gaps and deepen understanding of effective processes and opportunities involved in carbon management, including a focus on benefits such as health, traffic management, agricultural sustainability, and reduced inequality.**

Conclusions about Pervasive Carbon: Where To Go?

- Expanded use of data related to social segments, lifestyles, purchasing, activity patterns
- Better understanding of real-life decision making and energy use
- Carbon embeddedness in routines and habits
- Shared and varied patterns of energy/carbon use
- Motivations for change, especially non-economic/irrational
- Expanded market transformation activities
- Effective codes and standards for technologies (existing and new)
- Development of integrated systems models and analyses
- Expanded understanding of technologies as including social practices, regulatory and market rules, landscapes, and values
- Communication among stakeholders and researchers and policymakers

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