Knowledge networks and multi-interpretive frameworks for strategic carbon management

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1. Analytical dimensions of carbon (and GHG) governance needs to align with ethical goals.

2. Ethical imperative for interpretive systems

3. Decision Support System Design

4. Development of Case Studies
Overview of significant ethical dimensions 1

1. Many of those who will be most harmed by climate change have contributed little to causing the problem;

2. Many of those who emit the most GHGs are least threatened by adverse climate change impacts;

3. Those who are most vulnerable to climate change harms are often least able to pay for adaptation measures needed to protect them from climate change impacts;

4. In responding to the threat of climate change, current generations will affect the interests of future generations;
Overview of significant ethical dimensions 2

5 In allocating national emissions reductions targets, policy makers will need to take a position on who has a right to use the biosphere as a global carbon sink and in what amounts;

6 Emissions levels from human activity vary greatly around the world and therefore the huge emissions reductions that will be needed to prevent dangerous climate change will fall disproportionately on some if equity is not taken seriously;

7 Because there is a need to set an agreed upon global atmospheric target, climate change policy makers will need to face the question of who should bear the burdens of reducing emissions so that atmospheric target is to be achieved through national emissions limitations.
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Ethics drives how we engage in interpretive processes

Ethics of the situation call for: a global scope to this global problem, based on regional interoperability and federation of data types, while remaining well established in locally grounded data production and contexts.

An “ethical” approach to management and governance, thus, requires simultaneous attention across these various (spatial, temporal, and social) scales.
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Given: 1. Decision making is a messy process riddled with uncertainties. 2. The relationship between science advisors and decision makers is very different in different political contexts.

The main purpose of the carbon interpretive network/framework is to provide decision-makers and policy-makers with the ability to weight decisions across significant sectors of society, economy, and the environment, in the spirit of the “triple bottom line” of sustainable development and sustainable consumption. There are also residual benefits to the framework in that it would allow media and other public forums access to interpreting carbon data, which would promote increased awareness and literacy of carbon relevant issues, and promote further participation in decision making.
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Examples from ecological networks and policy tools

- Regional FLUX nets;

- “From LTER to LTSER: Conceptualizing the socio-economic dimensions of long-term socio-ecological research;”

- Integration of urban ecological monitoring into wider ecological research networks;

- “Right-to-know” legislations, such as TRI;

- Supporting “right-to-sue” laws for supporting knowledge.
Supporting Equity in Analysis  
Ethics of Interpretations  
DSS  
Decision-maker needs?

The Synthesis Hub is the core of this process.
Sector Centers are disciplinary layers in the interpretation and aggregation of scientific data on regional carbon budgets.
Regions designate data flows coming from geographically distributed producers of carbon data, and also other forms of demographics. The smaller circles indicate sub-regions in each of these regions, where data will be collected.
In addition to carbon data (emissions, sequestration, vulnerable pools), the Synthesis Hub will need to identify and connect with the flow of other forms of quantitative data and qualitative information (policy documents, ethnographic studies, epidemiological studies, etc.) The sector specific cleaning, coding, and synthesis of this information (both quantitative and qualitative), however, will necessarily become the responsibility of the various POETIC Centers. First, the Sector Centers need to develop and maintain disciplinary (sector relevant) codes which will be centrally stored at the Synthesis Hub, but implemented in the Sector Centers (see data flow section). Second, each of the Centers will be responsible for qualifying and gathering other forms of information (qualitative and quantitative) that can be used in conjunction with carbon specific data.
Primary Data Flow of Synthesis Hub

Outputs
Sequestration Pools
C DATA

Scientific Synthesis
data aggregation
cleaning
standardization

cleaned data and codes

Sector Synthesis
cleaning
standardization
data coding I.
data grouping I.

Non-C DATA
QCA Data
Regional stats
Demographics

Data repository
scientific C data
scientific coding
sector coding
sector data (nonC)

data and codes

distributed to the POETIC sector centers for refinement and use in scenarios

GCP and FLUX Scientific Researchers

Regional Data and Decision-Making Centers

POETIC
P O E T I C
I C
The Synthesis Hub will coordinate and be responsible for three primary data tasks. First, is carbon data aggregation, cleaning, and standardization; second, is the development and standardization of codes for carbon and non-carbon (or sector specific) data; third, is data storage. The flow of data and codes through the network, as diagramed (Diagram 2.), is meant to serve the data needs of relevant stakeholders, i.e. decision makers, scientists, media sources, and the public-at-large.
Supporting Equity in Analysis

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Sector Centers: Process Flow

Development of Sector Coding Schemes

Stage II. sector specific coding schemes

Sector Data Identification and Aggregation

bringing in non-C data sources relevant to sector interpretations

Sector Data Cleaning and Coding

cleaning, standardizing, and coding sector datasets

Development of Decision Matrices

based on QCA code development and matrices for scenario ready data use

Matrices Storage

storing non-C data, codes, matrices, and scenarios

= Sector Centers

= Synthesis Hub
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Synthesis Hub: Sector Code Management

Coding Development
Stage I. development of major code groups

Coding Review
Stage I. code review for coherency from Synth Hub

Coding Development
Stage II. inner-sector coding development QCA codes other codes

Coding Review
Stage II. code review management storage

= Sector Centers

= Synthesis Hub
The process flow of the development and maintenance of inner-sector codes and the qualifying and gathering other information (quantitative and qualitative) that can be used in conjunction with carbon specific data for the development of scenario matrices.
Case studies and repository for determining the needs of decision-makers

Identify how problems are identified and addressed:

**Emergent Interpretives** - how carbon management problems are articulated and formalized.

**Strategic Thresholds** - ethical plateaus where both capacity and resolve are stabilized enough for moving forward with carbon governance.

**Methods:** QCA, Conjoint, and Ethnographic Analyses

**Meta-questions:** How have policies been developed? How much data and what kind of data was used to develop a municipal, state, or national level policy? In what contexts and when is there enough information? What are the biggest perceived problems that are sector specific? How does regional planning counter the goals of municipal planning? What are the unexpected contexts and trade-offs? How is temporality addressed?
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