

**Regulation of Ocean
Iron Fertilization:
A Model for Balancing Research,
Environmental, and
Policy Concerns**

AGU Fall Meeting
December 16, 2008

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Overview

- ◆ Background on Ocean Iron Fertilization (OIF)
- ◆ Key Concerns about OIF
- ◆ The Regulatory Challenge
- ◆ Assessing the Newly Adopted Regulatory Framework
- ◆ OIF Regulation as a Model for Geoengineering
- ◆ Questions & Comments



Why Ocean Iron Fertilization?

- ◆ Basic premises
 - Climate change is critical threat
 - OIF may offer effective tool to sequester large amounts of carbon by enhancing existing natural processes
 - Cost of OIF compares very favorably to other mitigation technologies
 - Scale of OIF is potentially significant in light of size of the challenge
 - Not a silver bullet, but a bridge



Why Ocean Iron Fertilization?

- ◆ Science is promising
 - Success of recent experiments
 - Observations of natural blooms
- ◆ High likelihood of beneficial effects
 - Reduction of atmospheric CO₂
 - Sequestration for a meaningful timeframe
- ◆ Low likelihood of negative effects
- ◆ Science community calls for further pursuit



What are the Concerns?

- ◆ Efficacy: It won't work
 - Duration of sequestration
 - Cannot measure amount sequestered
 - N₂O or other byproducts will nullify CO₂ sequestration
- ◆ Safety: It might harm the ocean
 - Eutrophication
 - Harmful algal blooms
 - Anoxia
 - Potential for ecosystem shifts



What are the Concerns?

- ◆ Precautionary Principle: how to address risk in face of uncertainty?
 - Should research activities continue?
- ◆ Role of Commercial Interests
 - Should this be market driven?
 - Should carbon credits be sold?
- ◆ Given the Potential Impact on Global Commons, Who Gets to Decide?
- ◆ Based on What Criteria?
- ◆ *Note: These are same concerns raised about geoengineering projects more generally*



Global Regulatory Challenge

1. Ensure that environmental concerns are addressed, including appropriate focus on precautionary principle
2. Provide enabling framework to allow research into promising technology
3. Subject research to appropriate oversight
4. Keep system dynamic to allow for response to changing information



Potential Sources of Oversight?

- ◆ UN Convention on the Law of the Sea
- ◆ UN General Assembly
- ◆ Convention on Biological Diversity
- ◆ Intergovernmental Oceanographic Commission
- ◆ International Maritime Organization: London Convention on Ocean Dumping & London Protocol



Oceans and Law of the Sea
Division for Ocean Affairs and the Law of the Sea



**Convention on
Biological Diversity**





London Convention/ London Protocol

- ◆ Multilateral Agreements Housed at IMO
 - Global competence for ocean dumping
 - Do not apply directly to OIF activities
 - Impose obligations on flag states, port states
- ◆ London Convention:
 - 1972, 85 parties
 - Requires permit for ocean “dumping”
 - Prohibits dumping of blacklist substances
- ◆ London Protocol:
 - A 1996 update, 35 parties
 - Prohibits *all* dumping *except* specified categories: dredged material, sewage sludge, fish waste, vessels/platforms, inert inorganic geological material, organic material of natural origin, bulky iron/steel/concrete



Climate Change in the LC/LP

- ◆ LP originally prohibited sub-seabed CO₂ sequestration
- ◆ LP amended to permit sequestration, subject to guidance
- ◆ Demonstrates LC/LP ability to adjust to reflect urgent climate change impacts
- ◆ Preamble: “Being seriously concerned by the implications for the marine environment of climate change and ocean acidification due to elevated concentrations of CO₂ in the atmosphere”



Threshold Scope Question: Is OIF “Dumping”?

- ◆ “Any deliberate disposal into the sea of wastes or other matter from vessels”
except
- ◆ “placement of matter for a purpose other than the mere disposal thereof”
provided
- ◆ “that such placement is not contrary to the aims of [the agreement].”



Is OIF “Dumping”?

- ◆ OIF clearly involves placement of matter for purpose other than disposal.
- ◆ Is OIF “contrary to the aims” of these agreements?
 - Both aim at protecting marine environment
 - LC: “take all practicable steps to prevent pollution ... liable to create hazards to human health, to harm living resources and marine life, to damage amenities, or to interfere with other legitimate uses of the sea.”
 - LP: “apply a precautionary approach to environmental protection from dumping ... whereby appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm...”



OIF in the LC/LP ...

- ◆ Scientific Group -- June 2007
- ◆ Driven by Greenpeace/IUCN concerns
- ◆ Issues a Statement of Concern:
 - knowledge currently insufficient to justify large-scale operations
 - notes with concern potential for large-scale projects to have negative impacts on marine environment and human health
 - recommends that operations be evaluated carefully
 - identifies criteria to guide evaluations



...OIF in the LC/LP...

- ◆ LC/LP Meeting of Parties -- November 2007
 - endorses SG “statement of concern”
 - recognizes each State may consider on case-by-case basis
 - urges States to use caution when considering proposals
 - given present knowledge, large-scale operations currently not justified
 - mandates SG and legal group to develop further



... OIF in the LC/LP ...

- ♦ Scientific Group -- May 2008
 - avoids firm conclusions on open issues
 - identified uncertainties in information
 - developed broader list of criteria for evaluating OIF proposals



OIF in the LC/LP: The Outcome

- ◆ LC/LP Meeting of Parties – October 2008:
 - If “legitimate scientific research,” it is placement not contrary to aims of agreement
 - Other projects not allowed
 - Each proposed project must be assessed at the national level, based on agreed criteria
 - Determination that project is legitimate research = no further review or permitting
 - What is “legitimate scientific research”?
 - Currently for each Party to decide
 - But Scientific Group is elaborating assessment criteria
 - Commercial activities not excluded



Next Steps in the LC/LP

- ◆ 2009 will be a busy year
 - Scientific Group will develop assessment criteria
 - Intersessional work will contribute scientific information to inform that decision
 - Other intersessional work to develop further decisions or even an amendment to LP for next fall



A Different Approach: CBD Decision -- April 2008

3. *Recognizes* the current absence of reliable data ...;
4. *Bearing in mind* the [activity under LC/LP], *requests* Parties ..., **to ensure that ocean fertilization activities do not take place** until there is an adequate scientific basis, and a global ... regulatory mechanism is in place...; **with the exception of small scale scientific research studies within coastal waters**. Such studies ... should also be subject to ... prior assessment ... and not be used for generating and selling carbon offsets or any other commercial purposes;



Impact of CBD Decision Likely Limited

1. Dubious science

- IOC *Ad Hoc* Group: “The restriction ... to coastal waters appears to be a **new, arbitrary and counter-productive limitation...** [N]o scientific basis A careful science-based ‘assessment of associated risks’ depends on knowledge that could be gained by further experimentation.”

2. Superseded by LC/LP processes

- CBD expressly acknowledges LC/LP’s role
- CBD inactive; will not meet again until May 2010
- CBD decision already outdated



Global Regulatory Challenge

1. Ensure environmental concerns addressed?
2. Enabling framework for research?
3. Subject research to appropriate oversight
4. Keep system dynamic, to allow for response to changing information

Current LC/LP Framework

- ✓ Assessments include environmental reviews
- ✓ Legitimate research preserved
- ✓ All OIF activities subject to advance oversight by LC/LP Parties
- ✓ Resolution expressly subject to review; expert groups development assessment criteria



Other Policy Concerns?

- ◆ Fair to allow one entity to benefit from a global resource?
 - OIF different from fishing or seabed mining, where resources finite and used to benefit few
 - OIF (if done right) is a global public good, because all benefit from carbon removal
- ◆ What about the rogue actor who uses “flags of convenience”?
 - LOS Convention “bootstrap” provision
 - Pressures in carbon market
 - “Quality” of credits drives voluntary market
 - Compliance markets will have eligibility criteria
 - Pressure from science community



Relevance to Other Geoengineering?

Common Issues

- ♦ Politically controversial
- ♦ Need to develop agreed norms before deployment
- ♦ Critical role of science in fostering cooperation and building norms

Issues Distinct to OIF

- ♦ Treaty regime already in place
- ♦ Level of knowledge more advanced
- ♦ Lower risk of direct impact on national interests



Lessons for Geoengineering

- ◆ Multiyear evaluation of research
- ◆ National delegations with science competence
- ◆ Involvement of external experts on scientific and technical issues
- ◆ Coordination with other UN bodies, and within governments participating in such bodies
- ◆ Recognition that risks must be viewed against backdrop of risks from climate change

Thank You!

Questions?