



Carbon Management Initiative

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Carbon Management Initiative

Agenda:

- Why?
- Abstract - Motivation
- Mission
- Organization
- Collaboration
- Research
- Graduate Certificate Program in Carbon Management
- Outreach



Carbon Management Initiative

- First initiated by passionate students looking for a program to fit their needs
- University of Michigan has broad range of top schools and departments
- Great arena for trans-disciplinary education and collaboration

Abstract - Motivation

- The most recent IPCC study in 2007 provides evidence that the concentration of carbon dioxide in the atmosphere, the most important anthropogenic greenhouse gas, has increased by nearly 35% of its pre-industrial value.
- It is now evident that if the next generation truly wants to solve the climate problem, it must look into controlling and reducing anthropogenic carbon dioxide emissions.
- It is proposed that a Carbon Management Initiative (CMI) be created at the University of Michigan to help tackle this interdisciplinary issue.
- The University of Michigan is a world-renowned research institution with a strong representation of all sectors, including science, business, policy, and law, that are needed to provide a full investigation of the carbon problem.

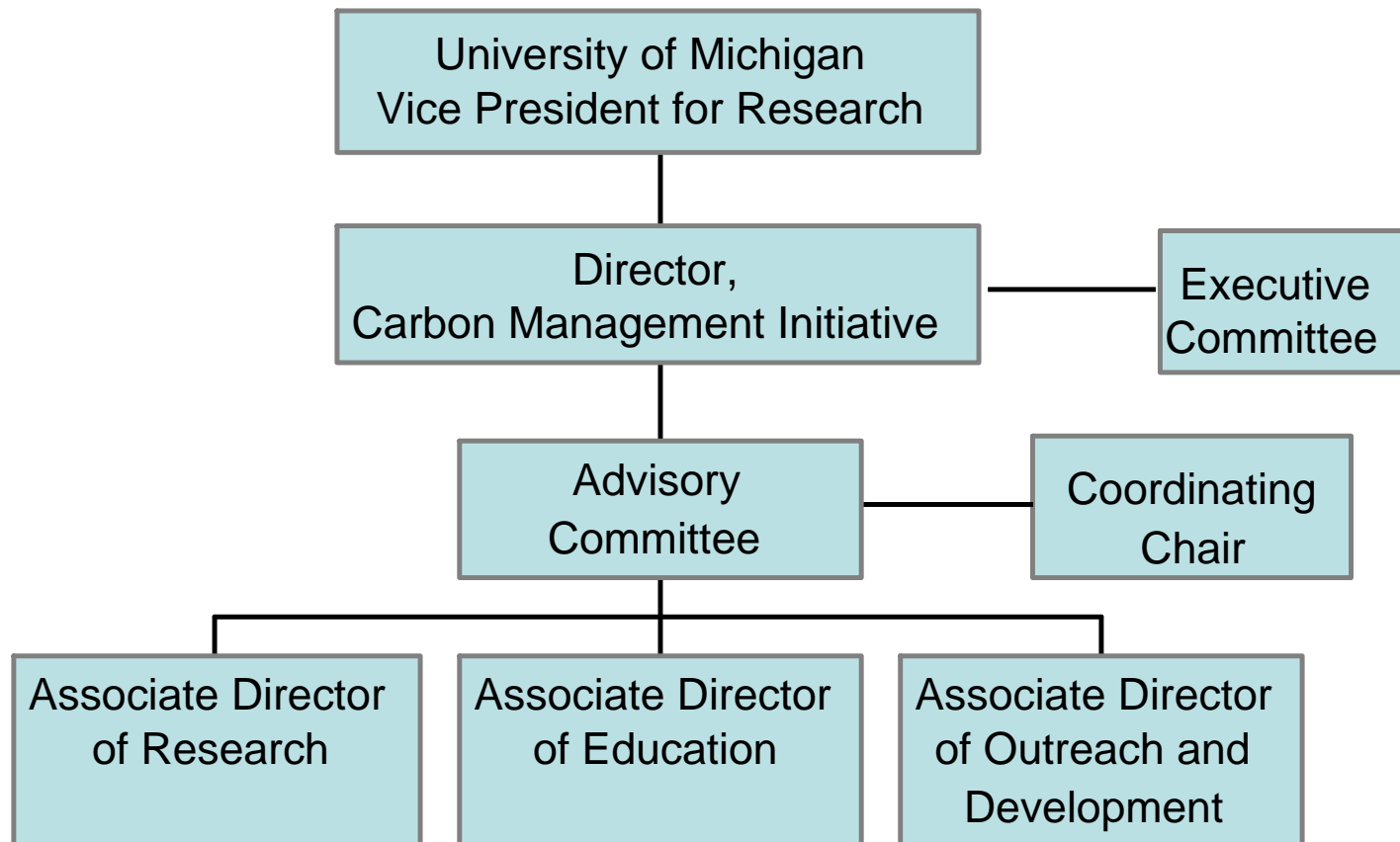


Mission

Generate opportunities and promote collaboration among the various disciplines at the University of Michigan in order to initiate broader learning and a strong foundation for the successful implementation of advancements in carbon management.

Organization

Organization Chart Carbon Management Initiative



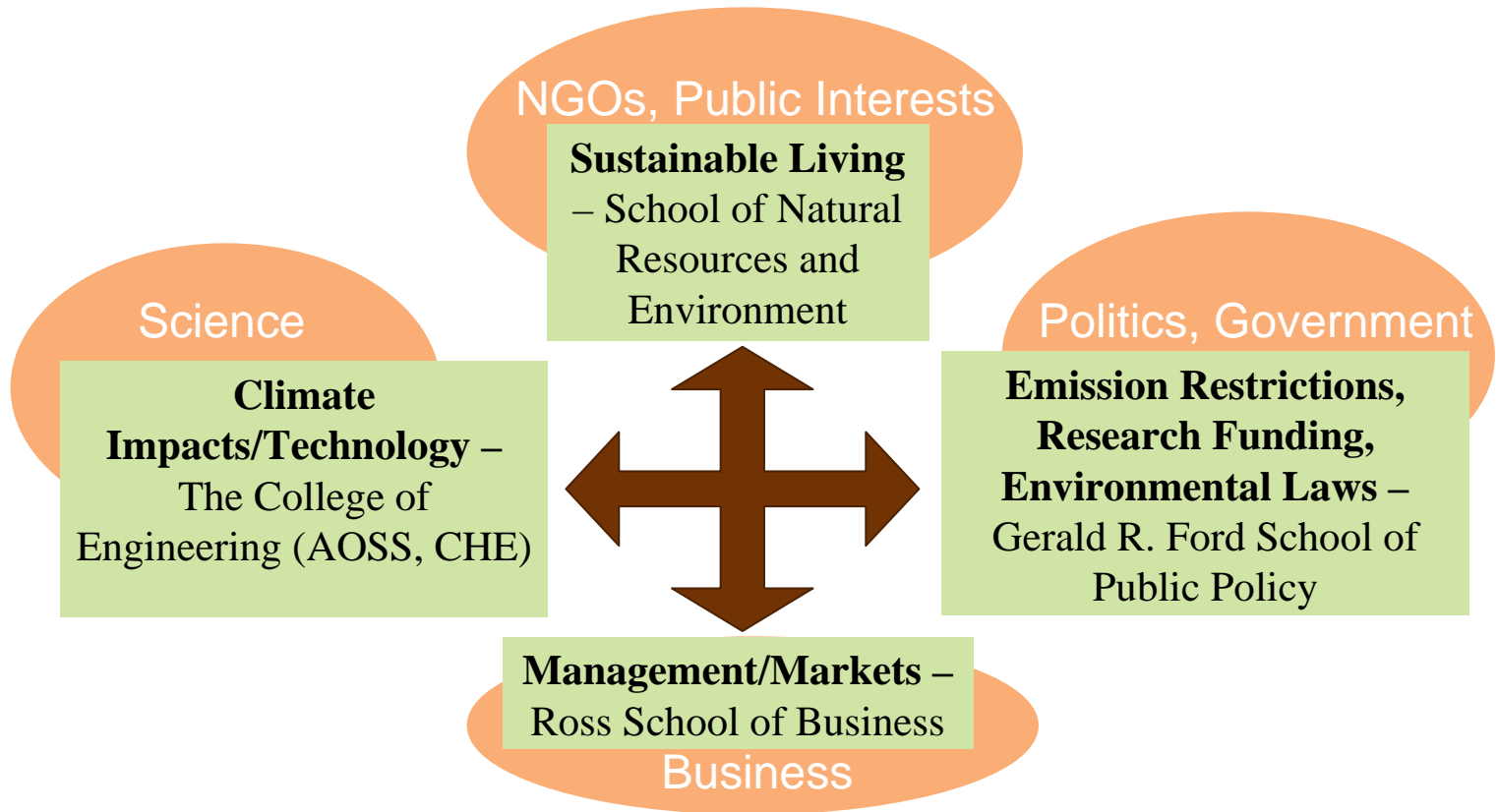
Collaboration

- **Academic Programs**
- Involve existing schools and departments
- Model the initiative after and involve existing trans- disciplinary programs

Trans-Disciplinary Programs
Science, Technology, and Public Policy
Science, Technology, and Society
Energy Systems Engineering
Industrial Ecology
Global Health
CMI

Potential Fields of Study
Business School
School of Public Policy
School of Public Health
The Law School
The College of Engineering
The School of Natural Resources and Environment

Collaboration



Collaboration

Pillar	SNRE	School of Public Policy
<i>Rationale</i>	Involved with NGO's, public interests, and scientific research	Works to understand the workings of government and policy
<i>Program Focus</i>	Focused on creating sustainable living and protecting the environment	Help students understand what influences policy and how to implement policy
<i>Research</i>	Research focused on understanding the impacts of human living on the environment	Research focused on external influences on policy and the capacity for policy implementation

Collaboration

Pillar	Business School	College of Engineering	
		AOSS	CHE
<i>Rationale</i>	Understanding and creating markets and strategies	Understanding Science	Understanding and using science to create technology
<i>Program Focus</i>	Develop management strategies for all types of concentrations from finance to marketing	Understand Earth's complex atmosphere and its coupling on Earth and space	Develop chemical engineering principles and engage in interdisciplinary education for focused skills
<i>Research</i>	Research focused on business decision making (tools, laws, public opinion)	Modeling atmospheric chemistry to understand climate change	Finding long term technological solutions to combat increased energy usage

Research

- Investigate possible carbon market solutions via an trans-disciplinary approach.
- The research and development of carbon neutral energy technologies to provide alternatives to fossil fuel energy technologies that are known to be major players in climate change.
- The examination and development of carbon sequestration and storage of emissions from preexisting fossil fuels technologies.
- Specific interest in research and development of the transportation sector is important due to its fraction of carbon emissions and the University of Michigan's close proximity and relationship with the automobile industry.
- Research focused on the examination and understanding of the health and societal impacts of climate change.



Research

Funding:

- **Graduate Student Fellowships**
 - Ph.D. students in 3rd and 4th year
- **Faculty Fellowships**
 - Faculty appointments in one of the main departments/schools
- **Small Research Grants**
 - Secondary projects that incorporate undergraduates and master students
 - Trans-disciplinary

Graduate Certificate Program

Graduate Certificate Program in Carbon Management

- 3 years 18 credits
- Meets demand for trans-disciplinary graduate carbon management studies preparing students for careers in carbon management, science, and policy.
- Year 1 Winter Semester
 - Apply to certificate program in carbon management
 - Prerequisite: Industrial Ecology CEE 586
 - Prepares students for quantitative and qualitative footprinting analysis
- Year 2 Fall and Winter Semesters
 - Carbon Footprinting, Accounting, and \$ Cash Flow (3 credits)
 - Carbon Markets Strategy, Communication, Environmental Economics, and Public Policy (3 credits)
 - Renewable Energy Technologies, Climate Change, and Ecology (3 credits)

Graduate Certificate Program

- Summer between 2nd and 3rd year
 - Carbon project design trans-disciplinary paid summer internship
- Year 3 Fall and Winter Semesters
 - Requirements
 - Advanced Carbon Project Design (1.5 credit per semester)
 - Take fall and winter semester
 - Carbon Management and Risk Capstone (3 credits)
 - Elective courses (take 1 elective)
 - Theory and Principles of Sustainability NRE 565
 - Climate Change: A Call to Action AOSS 480
 - Green Construction NRE 605
 - Sustainable Finance FIN 637

Graduate Certificate Program

Prerequisites

Industrial Ecology CEE 586

Structural Courses

- Carbon Footprinting, Accounting, and \$ Cash Flow (3 credits)
- Carbon Markets Strategy, Communication, Economics, and Public Policy (3 credits)
- Renewable Energy Technologies, Climate Change, and Ecology (3 credits)

Summer work

- Trans-Disciplinary Paid Summer Internship

Capstone courses

- Required - Advanced Carbon Project Design (take twice for 1.5 credit per semester)
- Required - Carbon Management and Risk Capstone (3 credits)
- Electives - Take 1 Elective
 - Theory and Principles of Sustainability NRE 565
 - Climate Change: A Call to Action AOSS 480
 - Green Construction NRE 605
 - Sustainable Finance FIN 637



Summary

- **Graduate Certificate Program in Carbon Management**
 - 3 years 18 credits trans-disciplinary program
 - Meets demand for trans-disciplinary graduate carbon management studies preparing students for careers in carbon management, science, and policy

Outreach

- Outreach is critical part of CMI mission
- Includes
 - Alumni
 - Communities
 - Companies
 - NGOs
 - Governments
- CMI may develop the following:
 - An annual CMI graduate student carbon management fair
 - Quarterly newsletters that discuss carbon management solutions developed by the University of Michigan
 - Alumni and graduate student networking opportunities
 - Available to public trans-disciplinary open source resources



Carbon Management Initiative

Questions?

Thank you!