USDA's Role in Developing and Encouraging Carbon Sequestration Technologies and Practices

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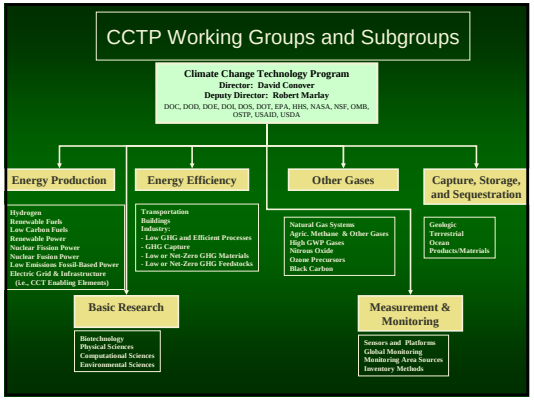
CCTP Working Groups and Subgroups



Carbon Capture and Geologic Storage

Future Research Directions

Carbon Capture

- Developing more cost-effective sorbents and separation membranes
- Improving understanding of purity requirements
- Reducing contaminants
- Controlling criteria air pollutants

Geologic Storage

- Defining optimal conditions in formations
- Predicting storage capacity and resource recovery
- Tracking fate of injected CO_2
- Understanding properties of shales and other unconventional formations

Measurement and monitoring capabilities

Health and safety and environmental risk assessment

Terrestrial Sequestration

Future Research Directions

- Establish carbon sequestration potential for key management practices across all major land uses
- Demonstrate carbon management strategies consistent with economic and environmental goals
- Understand implications for ecosystem services
- Optimize strategies to account for all greenhouse gases and other environmental consideration
- Evaluate carbon stock vulnerabilities and stability
- Develop methods to measure and monitor stocks and fluxes
- Explore potential to enhance sequestration through use of advanced technologies

Ocean Storage and Sequestration

Future Research Directions

Direct injection

- Determination of effects of changes in pH and CO_2 concentrations on physiology and ecology in mid- and deep-water habitats
- Feasibility experiments
- Improved understanding of CO_2 behavior in oceans through lab studies

Iron fertilization

- Improved understanding of the role of iron in the pelagic community
- Role of iron fertilization in accelerating the downward transport of carbon from surface waters to the deep sea
- Long-term ecological consequences

Products and materials

Future Research Directions

- Development of biomass energy and additional uses of durable biobased products
- Improve the biomass feedstock supply technologies (harvesting, handling, processing, transportation)
- Demonstrate strategies that are consistent with economic and environmental goals
- Development of advanced technologies to support the development of biobased products

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USDA's Climate Change Activities

- **Implement actions under USDA's conservation programs**
- **Develop methods for estimating sources and sinks from agriculture and forestry**
- **Support Climate Vision**
  - **MOU with the rural utilities**
  - **Agreement with the American Forest and Paper Association**
- **Support the development of technologies and practices**
- **Implement Climate Change Science Program Strategic Plan**
- **Cooperate with the Department of State on bilateral agreements**

In February 2002, the President directed Secretary Veneman to:

- **Provide recommendations on targeted incentives for forest and agricultural sequestration of greenhouse gases**
- **Develop accounting rules and guidelines for crediting carbon sequestration projects, in consultation with DOE and EPA**

Environmental Quality Incentives Program (EQIP) Ranking Criteria

- NRCS Providing national guidance to make GHG a priority resource concern.
- 7.1 MMTCE expected in 2012

Environmental Quality Incentives Program Anaerobic Digester Conservation Practice Standards

- New practice Standards for digesters announced
- Resources also available under biomass energy provisions
- 10.2 MMTCE of methane emitted from livestock waste handling in 2000

- NRCS expected to reduce 2.3 MMTCE in 2012

Environmental Quality Incentives Program: Nutrient Management and Precision Agriculture

- The U.S. emitted 20 MMTCE from fertilizer and manure land application
- Tiered payments under EQIP will reward producers who improve nutrient management

- NRCS expects a 1 MMTCE benefit from these actions

Conservation Reserve Program
Bottomland Hardwood Restoration

- Secretary Veneman recently announced that USDA would target 500,000 acres (226,000 ha) of bottomland hardwoods under the CRP continuous sign-up

- Bottomland hardwoods are among the most productive lands in the U.S. for sequestering carbon

- USDA expects 1 MMTCE of carbon sequestration in 2012 (with greater levels of sequestration in out years)

Timeline for Preparation of Forestry and Agriculture Accounting Rules and Guidelines

	Guidelines	Forms and Software
Jan 03	Technical Workshops – Jan 2003	
	Post-workshop comments – Feb 2003	
	Develop general guidelines with DOE guidelines – Jan – Dec 2003	
	Public comment on draft guidelines – Dec 2003 – Feb 2004	
	Workshop on General guidelines January 12, 2004	
Jan 04	Technical guidelines for public review -- Late spring early summer 2004	
		Initiate work on forms
		Draft forms
		Government review of draft forms
		Revise draft forms
		Propose draft forms for public comment
		Develop and test software
		OMB review of reporting forms
	Issue revised accounting rules and guidelines as part of DOE 1605 b Guidelines – Summer/fall 2004	Final forms and software Summer/fall 2004
Summer/fall 04		

Develop outreach and educational materials

- NRCS synthesis of cost-effectiveness of new technologies.
- New accounting rules and guidelines for greenhouse gases.
- Grants for education on biodiesel use through Section 9004 of the 2002 Farm Bill.
- Cooperation with land grant universities through CSREES grants.
- New federal procurement standards for biobased products.
- RUS encouragement of biodiesel use by borrowers.