

# **Sequestration: What Elements Are Needed to Implement It, And Are They in Place?**

**Kenneth Richards  
Indiana University**

**Forestry and Agriculture Greenhouse Gas Modeling Forum**

**National Conservation Training Center  
Shepherdstown, West Virginia**

**October 13, 2004**





**Question:**

**Are the elements for a  
carbon sequestration program in place?**



## **Need to clarify**

- **Scale**
- **Goal**
- **Practices**
- **Political will**

## Practices to Increase Carbon Stocks or Reduce Emissions of Greenhouse Gases

	<b>Activity to affect:</b>		
<b>Land type</b>	Expansion of stocks	Conservation of stocks	Offsite sequestration or emissions reduction
Forest	Reforestation Modified management e.g., fertilization, improve stocking, biotechnology, species mix, extended rotations	Modified harvesting practices Preventing deforestation Change to sustainable forest management Fire suppression and management	Wood fuel substitution Expanded wood products Extended wood product life Sealing landfills Displace concrete/steel Recycling wood and paper products
Crop	Afforestation Agroforestry Improved cropping systems Improved nutrient and water management Conservation tillage Crop residue management Restoration of eroded soils Conversion to grass or other permanent vegetation	Soil erosion and fertility management Water management Maintain perennial crops Residue management	Biofuels substitution Fertilizer substitution or reduction Other bioproducts substitution
Grazing	Afforestation Change in species mix, including woody species Restoration of riparian zones Fertilization Irrigation	Improved grazing systems	Livestock dietary changes

## **Question:**

**Given sufficient political will,  
are the elements in place for an aggressive domestic  
sequestration program of 50 – 300 million tons per year that  
focuses on conserving and maintaining carbon stocks  
on forest, crop, and grazing lands?**





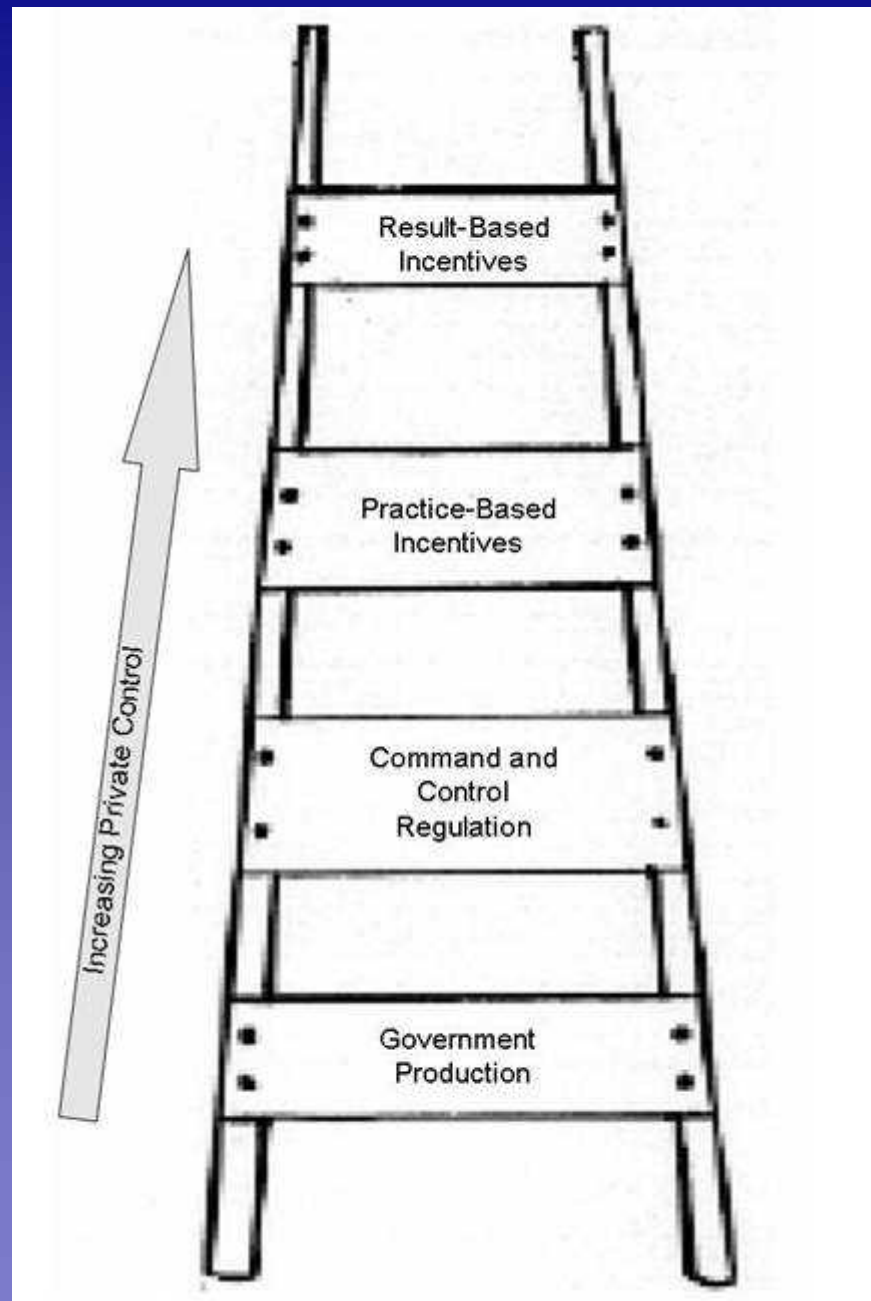
## **Question:**

**Does that mean that we will all be participating in extensive carbon sequestration offset programs?**



## Examples of Implementation Options

- **Voluntary programs**
- **Government production**
- **Regulations**
- **Contracts**
- **Taxes**
- **Subsidies**



# Examples of Bills Related to Carbon Sequestration from 106<sup>th</sup> to 108<sup>th</sup> Congresses

Title	Citation	First Sponsor	Type
The Energy and Climate Policy Act of 1999	106 S. 882	Murkowski	Voluntary/Action Gov't Prod/Information
Carbon Cycle and Agricultural Best Practices Act	106 S. 1066	Roberts	Prac-Based Incentive/Action Gov't Prod/Information
Climate Change Tax Amendments of 1999	106 S. 1777	Craig	Prac-Based Incentive/Action
Credit for Voluntary Actions Act	106 H.R. 2520	Lazio	Res-Based Incentive/Action
Carbon Sequestration Tax Credit Act	107 S. 765	Brownback	Res-Based Incentive/Action
Carbon Sequestration and Reporting Act	107 S. 1255	Wyden	Prac-Based Incentive/Action
National Greenhouse Gas Emissions Inventory Act	107 H.R. 4611	Olver	Regulation/Information
Climate Stewardship Act of 2003	108 S. 139	Lieberman	Res-Based Incentive/Action
Healthy Forests Restoration Act	108 1904	McInnis	Gov't Prod/Action

## **Conclusion:**

- **There are many approaches to implementing a carbon sequestration program**

## **Question:**

**Is minimizing the cost of sequestering carbon the only criterion for choosing an implementation approach?**





**Minimize:**

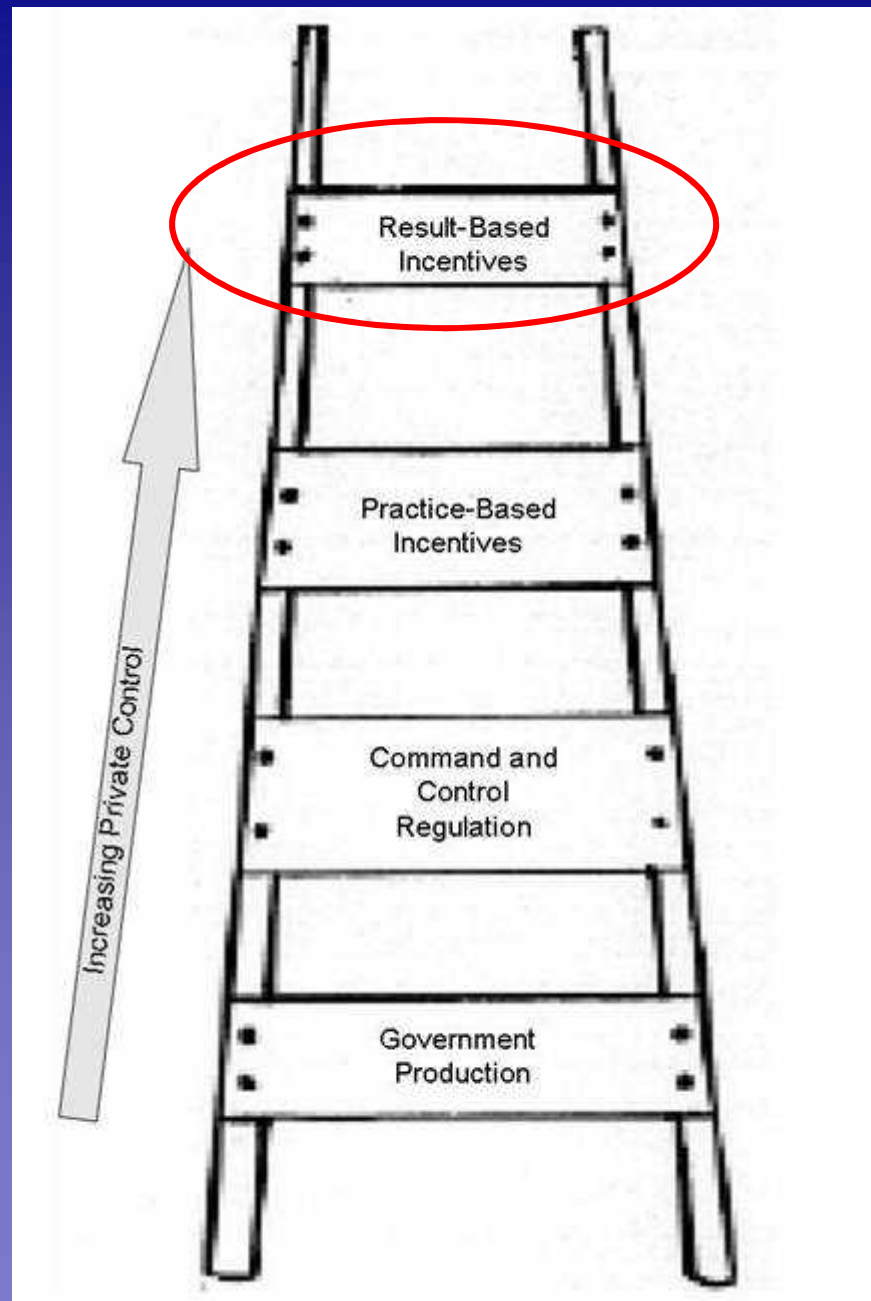
**Cost of creating sequestration +  
Public finance costs of raising revenue +  
Implementation cost**

**Subject to:**

**Environmental efficacy  
Political constraints  
Legal constraints**

## **Conclusions:**

- **There are many approaches to implementing a carbon sequestration program**
- **A carbon sequestration program will involve a plurality of approaches**



**Question:**

**Are we ready for an open entry system of carbon offsets?**



## **Question:**

**Besides the open entry system based on protocols, are there other result-based approaches available for carbon sequestration?**





## **Conclusions:**

- **There are many approaches to implementing a carbon sequestration program**
- **A carbon sequestration program will involve a plurality of approaches**
- **We may not be ready for an open-entry offset program, but that does not mean we are not ready for a result-based incentive program**