Analysis of Agricultural Carbon Sequestration Policy in Hawaii

By: Aimee Taniguchi,
Andini Ekaputri,
Emma Smith,
Patricia LaPorte and
Rupananda Widanage

Prepared for: Hawaii Greenhouse Gas Sequestration Task Force

Overview

Our focus / Background

Problem Framework

Analysis Framework

Policy/Solution Analysis

Recommendations and Conclusion

Our focus

"Identify … **agricultural policies**.. options that would encourage **agricultural** … **practices and land use practices that would promote increased greenhouse gas sequestration, build healthy soils**, and provide greenhouse gas benefits".

Climate-smart agriculture (CSA) is an approach that helps to guide actions needed to transform and reorient agricultural systems to **effectively support development and ensure food security in a changing climate.**

Food and Agriculture Organization of the United Nations

Background

- ✓ Agriculture is the science and production of plants and animals, to provide food, fiber, medicinal plants and other products to sustain and enhance life.
- ✓ Agriculture accounts for:
  - ✓ 12-14% of global greenhouse gas emissions
  - ✓ 9% of the US GHG emissions
  - ✓ 5% of Hawaii's carbon emissions

History of agriculture in Hawaii

- ✓ Hawaii's agricultural land use has changed dramatically over the last 35 years.
- ✓ Polynesian voyagers landed in Hawaii
- ✓ Monocrop industry (first half of 20th century)
- ✓ Tourism (1950s)
- ✓ Plantation closures (1970s - 2016)
- ✓ Diversified farm activities and in small-scale

Source: Pixabay

Characteristics of agriculture in Hawaii

- ✓ Farm size: 160 acres (average), 5 acres (median)
- ✓ Half of Hawaii's farms are less than 5 acres and the vast majority of acreage is in ranch land
- ✓ Age of farmers is 60 years old and the majority of them are new farmers.
- ✓ Diverse micro-climates and soil orders

Source: Pixabay

Status Quo

Sustainable Hawaii Initiative (double local food production by 2020)

No specific policy promoting carbon sequestration in agriculture

Limited State and Federal funding for local farmers

Analysis Framework – Market Failure

Social benefits of carbon sequestration

Costs of sustainable practices on farmer

Positive externality

Incentives to offset farmers costs

Methods

- Review of agriculture industry and policies in Hawaii
- Review of policies across the US to promote soil health and carbon sequestration (e.g., California, Virginia, NY)
- Interviews

Policy instruments (US states)

- Cost-share payments
- Education, Demonstration, and Technical Assistance Initiatives
- Agricultural loans
- Payment for Ecosystem Services - PES
- Government labeling standards for private goods or certification schemes

Policy Alternatives

- Cost-share (75% of net costs)
- Full subsidization (100% of net costs)
- Payment for ecosystem services (PES)
- Status Quo

For all three alternatives we recommend:

Education, demonstration, and technical assistance

CURRENT PRACTICES

CURRENT PERCEPTIONS

LEADERS IN COMMUNITY

Policy Goal	Impact category
Economic Efficiency	Profits are greater than costs
Cost Effectiveness	Funds required per farmer (75% vs 100%), Scalability (# farmers), and Timing (when funds are released)
Equity	Fair distribution of benefits to all farmers
Consistency with other Policies	2020 Local food production & current policies implemented in Hawaii as well as the other states.
Political Feasibility	Political weight of groups paying for and benefiting from this policy

Impact categories for policy goals (Qualitative)

Limitations

- Lack of quantitative data for Hawaii (e.g. carbon pools)
- Mainland experience does not translate perfectly to Hawaii
- Limited time and resources

Analysis

	COST-SHARE	FULL SUBSIDY	PES	STATUS QUO
Economic Efficiency	Moderate	Moderate	Higher	Lower
Cost Effectiveness	Higher	Moderate	Moderate to Higher	Lower
Equity	Higher	Moderate	Moderate	Lower
Consistency w/ other Policies	Higher	Moderate	Lower	n/a
Political Feasibility	Moderate	Lower	Higher	Moderate

Recommendations

(1) Cost share

(75% funding)

Lower total cost

Partnership with USDA (e.g. EQIP)

(2) PES

Demands a pay of premium, higher administrative cost.

Public-private partnership

Conclusion

- Market Failure
- Government Intervention
- Policy Options are Supplementary
- Future: Quantitative Benefit Cost Analysis


Questions?