

Eco-Carbon Accounting: A Method for Evaluation, Management and Innovation

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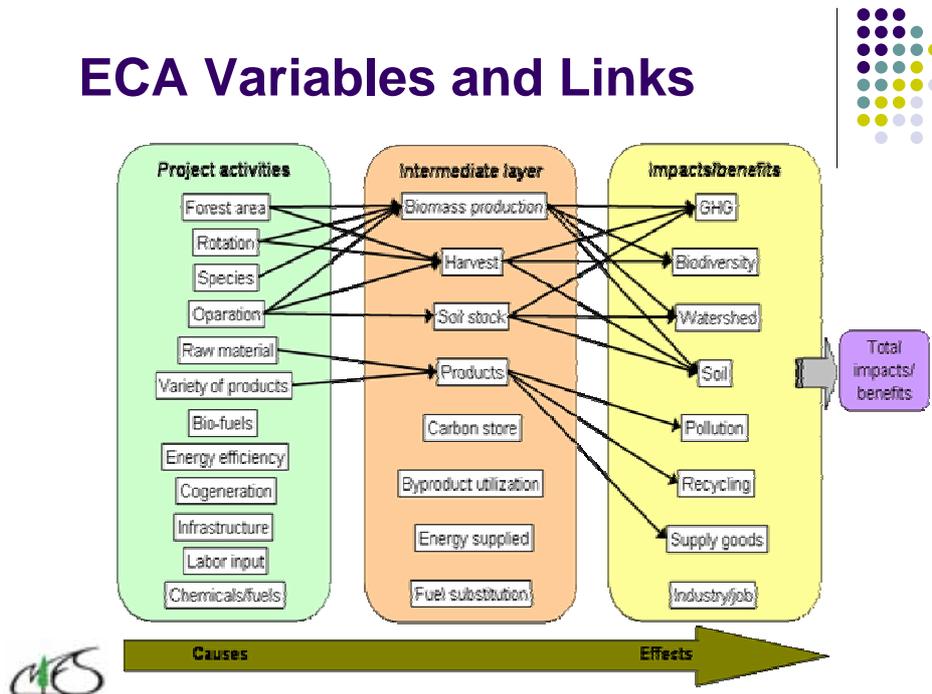
Eco Carbon Accounting Method



- Integrates evaluation of carbon sequestration & environmental co-benefits/impacts
- Uses quantitative criteria & indicators
- Applies flexibly to project-level and regional-level activities



ECA Variables and Links



Case Studies of ECA

- Forest management
- +
- Biomass energy production
- +
- Carbon Storage

ECA Case Study Results



- Graphical modeling of social and environmental (SE) impacts/co-benefits
 - Expert judgment approach
 - Statistical Modeling approach



Framework of ECAM



- **Evaluation of total Social & Environmental impacts/co-benefits and costs**
 - GHG, Biodiversity, Water, Soil, Pollution, Supply goods, Industry/Jobs
 - Cash flow analysis of projects
 - Environmental economic analysis



Case study; Regional carbon management project in Japan



- Project scale: 30 years, 25,000ha, Coniferous
- Project type: Combined activities
 - Forest management (Kyoto credit)
 - Thinning, rotation
 - Wood products (non-Kyoto)
 - Timber, chips etc.
 - Biomass energy (Kyoto)
 - Power supply to grid
 - Carbon storage (non-Kyoto?)
 - Charcoal in agricultural soil



Case study; ECA variables



- Social and Environmental impacts/co-benefits
 - GHG, Pollution, Supply goods and Job opportunity
- Economical benefits
 - carbon credits and green energy certificate
- Net present value (NPV)





Case study ; ECA results

Impacts/benefits ¹⁾	Environmental					Socio-economical					
	GHG ²⁾		Pollution			Goods/services			Job creation		
National project Maniwa, Japan	Removal	8,369	SOx	t	409	Timber	10 ³ m ³	1,836	Employment (Person)	615	
	Reduction	1,634	NOx		278	Chip	10 ³ m ³	1,832			
	Storage	ktCO ₂	237	Total ⁴⁾	10 ⁶ LIME	574	Biomass materials	10 ³ m ³			900
	Total		10,240				Charcoal	10 ³ t			72
							Electricity	GWh			2,635
		10 ⁶ US\$ ³⁾	51	10 ³ US\$	-	10 ⁶ US\$	3,772	10 ⁶ US\$	1,007		
		% of total cost	1.1	% of total cost	-	% of total cost	85	% of total cost	23		

1) SE impacts/benefits shows sum during project periods (30 years).

2) Accounting method of carbon is the base line and credit approach.

3) A carbon credits of removals by sink is adopted a temporary credit.

4) Integrated values by LIME (Research Center for Life Cycle Assessment, 2003).



[Please visit our poster session for more details](#)



ECA: For what purpose?

- Supplies validation, monitoring, verification, and certification tool for combined carbon management projects
- Fulfills need for certifying Sustainable Carbon Credit, minimizing negative impacts and maximizing social and environmental benefits



ECA and Reduced Risks



- ECA as a risk management tool
- Combines projects with different risk profiles for overall project management
- Emission risk of forest countered by biomass energy use
- Combined biomass energy and carbon storage leads to negative emission total



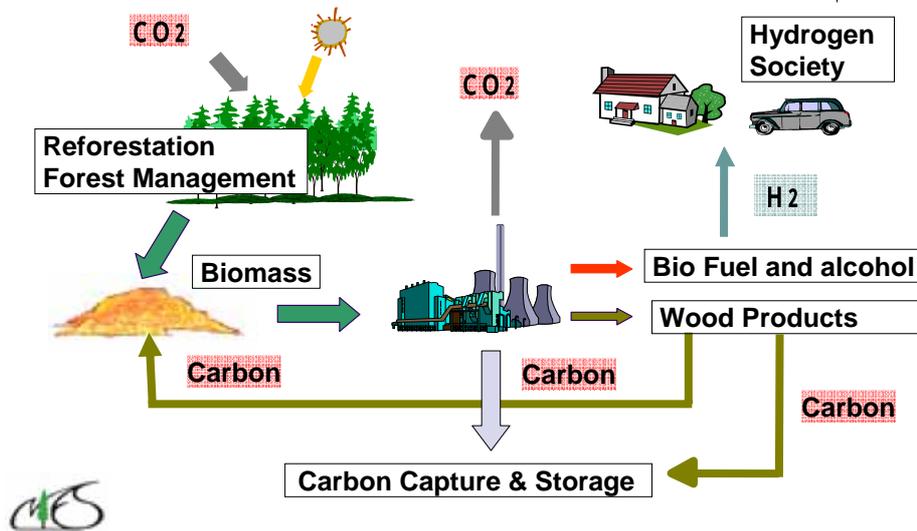
Induced Innovation by Crediting Combined Carbon Management Projects



- Reforestation & Forest Management
- Biomass Energy & Hydrogen
- Carbon Capture and Storage



ECA facilitate Hydrogen Society



Conclusion: Prospects for ECA



- Needed for CO₂ stabilization in 21st Century
- Environmental impacts (+/-) of carbon sequestration technologies
- Risks of carbon sequestration are policy issue under Kyoto Protocol and Beyond

