

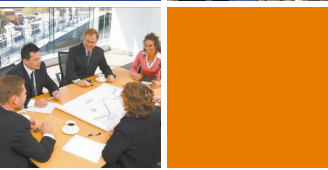


# International sustainability criteria: biofuels



June Gibbons

Thursday 22 April 2010



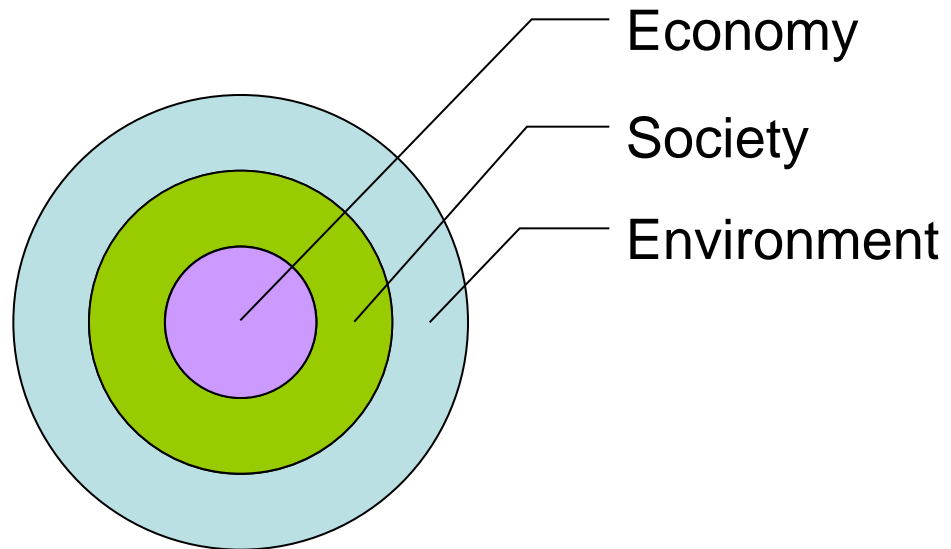
## Overview

- What are sustainability criteria?
- Who is producing them and where are they used?
- Some specific issues
  - Waste feedstocks, land use change and indirect land use change
- Where to next?



# What are sustainability criteria?

- Sustainability encompasses economy, society and environment





# Why produce sustainability criteria for biofuels?

## Reasons to develop biofuels

- Renewable energy source
- Fossil fuel scarcity
- Improvements in greenhouse gas balances
- Rural development

To support these claims



## Who is producing sustainability criteria & why

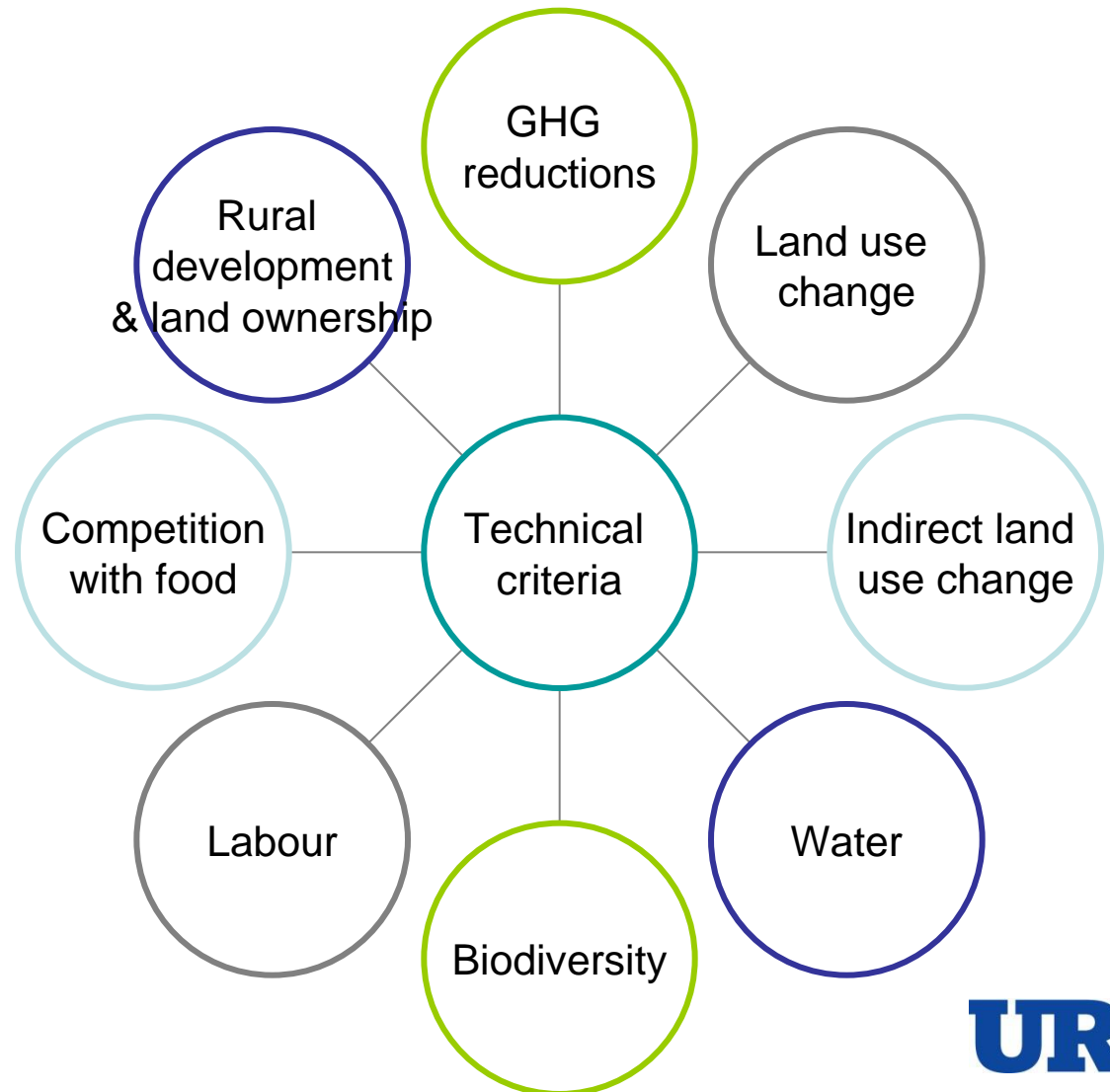
Source of sustainability criteria	Drivers
Governments and regulators	Minimum requirements Support local industry
NGO's and industry groups	Proof of environmental claims Product differentiation Customer pressure

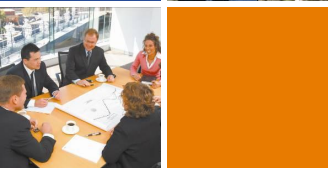


## Areas for sustainability criteria: technical

Full sustainability criteria cover a broad range of indicators.

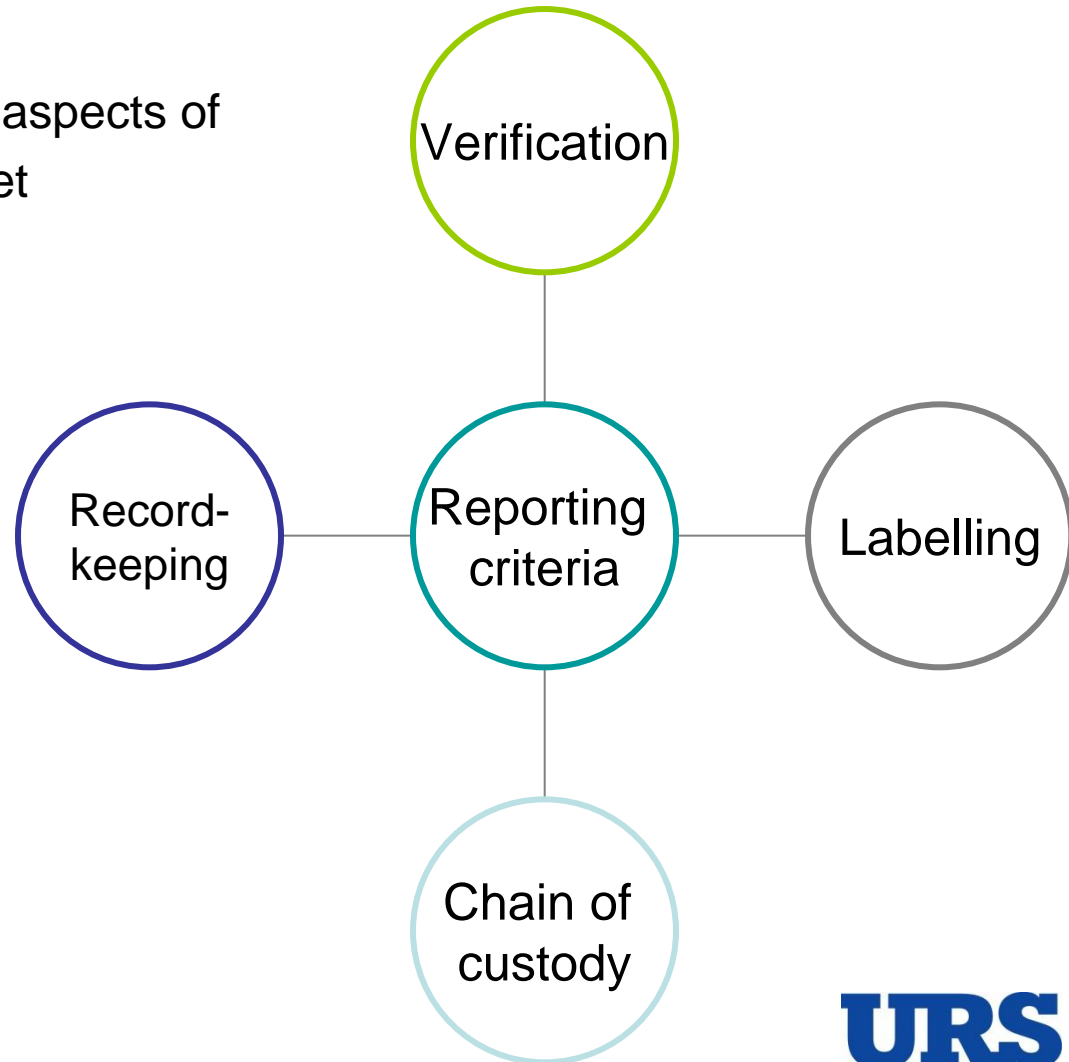
Often 'sustainable biofuels' only consider economy and carbon.





# Areas for sustainability criteria: reporting

Proof that technical aspects of sustainability are met





# Regulatory vs. voluntary approaches

Regulatory	Voluntary
<p>EU - Renewable Energy Directive</p> <p>UK – Renewable Transport Fuels Obligation</p> <p>USA – Renewable Fuel Standard</p> <p>California Low Carbon Fuel Standard</p>	<p>Roundtables – Sustainable Biofuels, Sustainable Palm Oil, Responsible Soy</p> <p>Forest Stewardship Council (FSC)</p> <p>Standards authorities: ISO, CEN, BSI</p>

- In general, regulatory approaches specify the outcome while voluntary approaches specify the method.
- Approaches overlap e.g. some voluntary standards are endorsed for use in regulatory approaches



# Regulatory approaches

- Sustainability criteria are added onto existing regulation around biofuels
  - E.g. a pre-requisite for biofuel to qualify for sales quotas, tax relief, import tariff relief, or production subsidies.
- Require the obligated party to demonstrate a minimum level of environmental performance.
  - Usually carbon emissions
  - Sometimes land use change



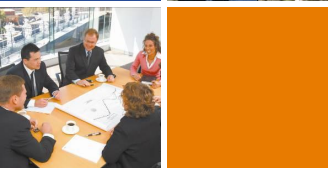
## Voluntary approaches

- Usually accompanied by some form of label or certification
- Developed for product differentiation, customer request, or corporate social responsibility motives
- Often set out a specific method as well as a minimum standard
- Usually include a broad range of sustainability criteria



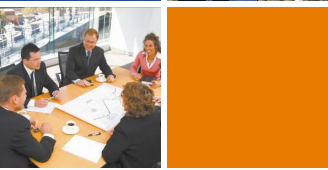
## Examples of specific regulatory programmes

- EU Renewable Energy Directive
- US Renewable Fuel Standard
- California Low Carbon Fuel Standard



## EU Renewable Energy Directive (RED) 2008

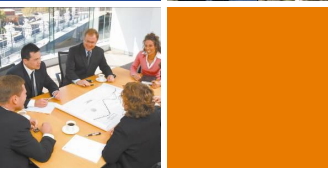
- 10% of transport fuels to be met from renewable sources by 2020
- Biofuels obliged to show 35% carbon reduction, rising to 50% reduction by 2017 and 60% reduction by 2018
- Biofuel must not be produced on high biodiversity value land (e.g. forest, certain grasslands, conservation land).
- Biofuel must not be produced on land which was previously forest or wetland (as at 2008)



## USA: Renewable Fuel Standard

- Federal regulation; comes into effect in 2010
- Biofuels must be plant based and must show a 20% GHG reduction against a baseline to classify as a renewable fuel
- No social or other environmental criteria or minimum standards
- Exceptions: fuels produced in a facility that was constructed before 2007, and in some cases which were constructed between 2007 & 2009 dependent on factory fuel source e.g. natural gas or biomass





# California Low Carbon Fuel Standard

- Regulates transport fuel providers to reduce the total GHG emissions of their fuel mix by 10% by 2020.
- Options to reduce emissions of fuel mix include:
  - Sales of biofuels
  - Sales of electricity or hydrogen as a fuel
  - Avoidance of high emission fossil fuels e.g. Canadian oil sands, Coal-to-liquid sources
  - Sequestration or carbon storage
  - Purchase of offsets or payment of penalties
- Only focuses on GHG emissions



## Examples of specific voluntary approaches

- Roundtable on sustainable biofuels (RSB)
- Global Bioenergy Partnership
- ISO standards



ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE



The Greenhouse Gas Protocol Initiative  
*The foundation for sound and sustainable climate strategies*



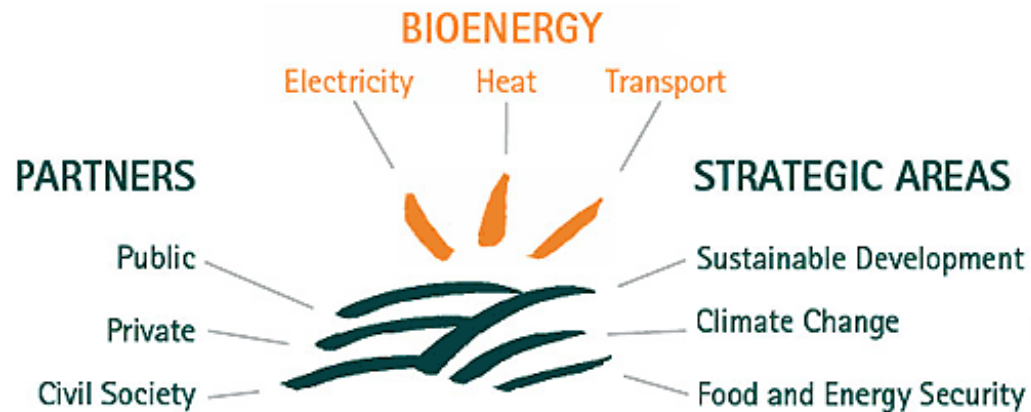
# Roundtable on sustainable biofuels (RSB)

- 12 Principles including:
  - Compliance with local laws, preparation and implementation of environmental & social plans
  - Reduce GHGs compared to fossil fuels
  - Respect for human rights, labour welfare, and contribution to rural development
  - Avoid conflict with food production
  - Avoid negative impacts on biodiversity, conservation values, soil, water, and air
- Still developing specific standards



# Global Bioenergy Partnership

- Made up of governments and international NGOs
- Developing criteria and meta-standards which producers can meet
  - Relevance
  - Practicality
  - Scientific basis
  - Geographic scale





## Draft ISO Standard ISO 13065

- **ISO/PC 248, *Sustainability criteria for bioenergy***
- First meeting was held June 2009, next meeting is April 2010
- Standardisation in the field of sustainability criteria for production, supply chain and application of bioenergy. This includes terminology and aspects related to the sustainability (e.g. environmental, social and economic) of bioenergy.



International  
Organization for  
Standardization



## Some specific issues

- Land use change
- Using 'waste' products as a feedstock
- Indirect land use change



## GHG accounting methods

- There is actual or potential variation between the methods for different regulatory or voluntary agencies
  - No calculation approach will satisfy all existing international regulations as parts of the calculation are mutually exclusive.

Issues	
Land use change	Treatment of 'waste' feedstocks
Indirect land use change	Allocation of emissions between co-products



# Land use change (LUC)

## Why is it an issue for biofuels?

To avoid the use of sensitive land for biofuels and as a proxy to address biodiversity impacts

To reduce GHG emissions from land use change

As a proxy to address food competition

## How is it addressed?

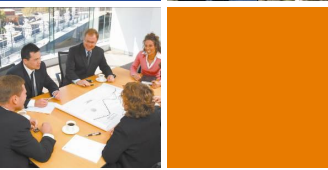
Prohibiting the use of certain lands for biofuel cropping e.g. wetlands, peatlands, forest lands, high-value conservation lands

Including a penalising factor e.g. adding additional GHGs because of land-use change



## Use of waste as a feedstock

- Currently, if the feedstock is considered a 'waste', then upstream environmental effects are not considered
  - Should emissions, environmental impacts, or indirect economic effects of the feedstock be considered?
- How should those upstream impacts be allocated to the first use and the re-use of the product.
- UK report indicates that using feedstocks which are otherwise disposed of is likely to have positive effects, while diverting feedstocks from other uses is likely to have negative effects
  - This is a simplification with many exceptions!



## Indirect Land Use Change (ILUC)

- The effect of displacement of existing land use
- Generally considered in terms of GHG emissions, also has other environmental & social effects
- Easy to identify at a macro-level and after the change has occurred. Very difficult to address at an organisational level
- Methodology is now in development



## Where to next?

- Biofuels are at the forefront of responding to public concerns around agricultural and industrial production methods.
- High transport fuel demand has potential for massive conversion of land into biofuel production
- Corresponding high level of government scrutiny



## “EU biofuels will be the most monitored and scrutinised product in the world”

European Biodiesel Board secretary general Raffaello Garofalo

- Does the high regulation of the biofuels industry simply displace negative effects elsewhere...?
  - E.g. palm oil which doesn't meet EU criteria being diverted to food or chemical industries
- Are too many regulations/systems causing confusion or creating a high financial barrier?



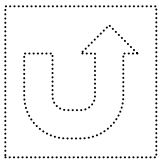
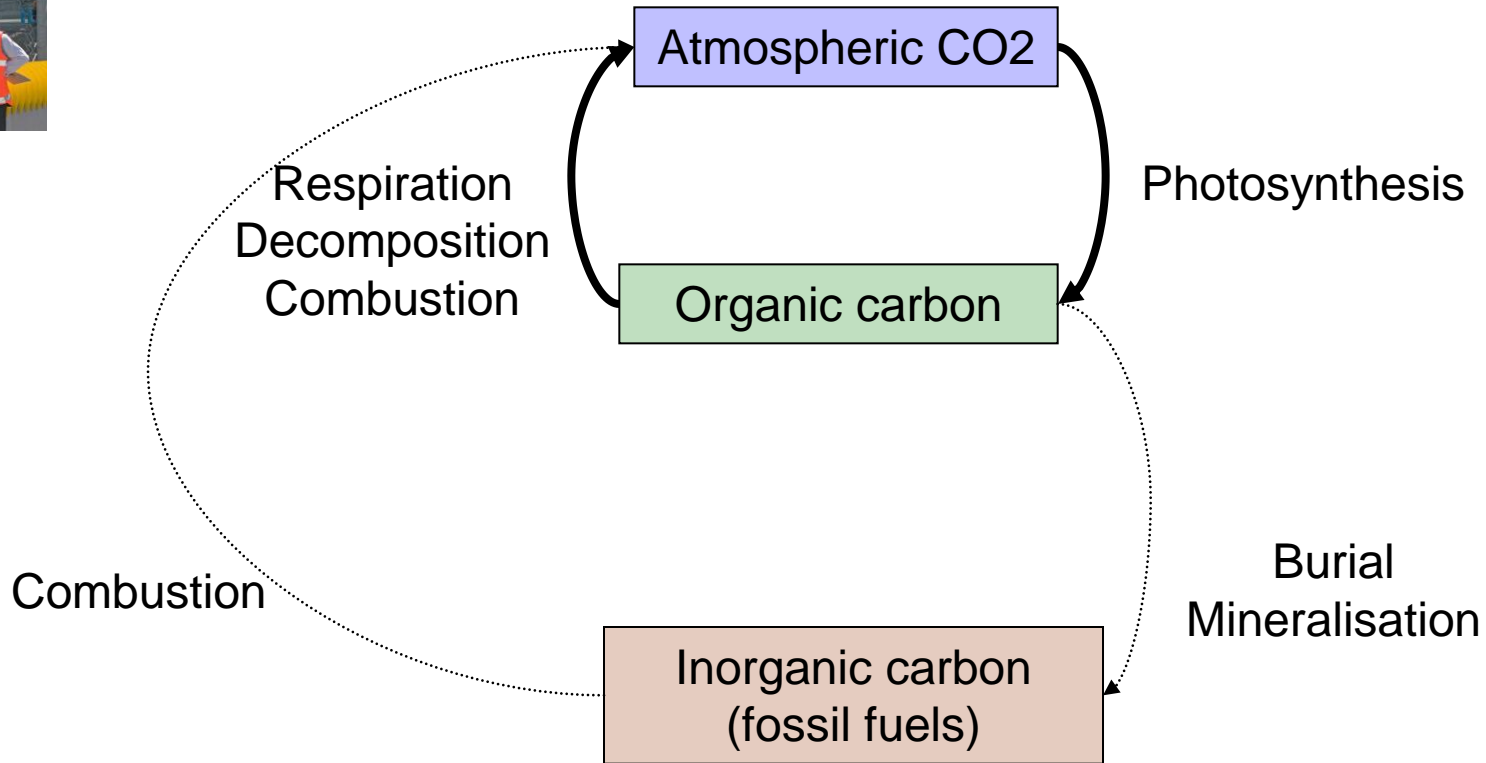
## Key messages

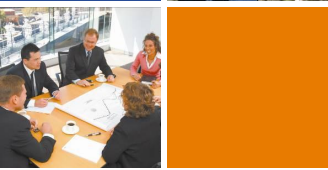
- Sustainability criteria support claims of the environmental and social benefits of biofuels
  - And help avoid developments which have negative impacts
- Biofuels alone won't solve the world's fuel, climate, or social equity problems
- But the status quo won't either





# Simplified carbon cycle





# EcoFys method for showing ILUC

Table S-1 Summary of methodology.

	'Unused land' <sup>1</sup>	Integration with non-bioenergy system	Increased productivity of existing bioenergy feedstock system
Displacement criterion	<u>Additional</u> production has been realised without displacing existing provisioning services of the land		
Demonstrating additionality	Demonstrate the project activity that increases feedstock production is additional: i.e. in absence of the bioenergy feedstock demand the measure would not have been implemented during the crediting period <sup>6</sup> .		
	i.e. the land would not have been taken into production	i.e. the integration model would not have been implemented	i.e. the yield increasing measure would not have been implemented
Setting the baseline	Zero (land previously unused)	Business as usual (BAU) production levels of non-bioenergy system (e.g. milk or beef)	BAU production levels of existing bioenergy system, anticipating BAU yield increases
Monitoring	Monitoring of realised bioenergy feedstock production levels	Monitoring that baseline production levels of non-bioenergy feedstock are maintained	Monitoring of realised bioenergy feedstock production levels
Claim that can be made	All realised production has a low risk of indirect effects	All realised bioenergy feedstock production has a low risk of indirect effects	The additional production ('realised production' minus 'baseline production') has a low risk of indirect effects

<sup>1</sup> The term 'unused' land is intended to signify land that is unused from an agricultural perspective but it is recognised that land is unlikely to ever be truly unused and safeguards for land rights for example are recognised in the resulting methodology.



## Accounting for tail-pipe emissions

- Traditional GHG accounting exempts tail pipe emissions from biofuels because they originate from biogenic sources.
- Assumption: If biofuels become a significant land use, then they will contribute to land use change somewhere on earth.
  - There is a finite volume of land on earth
  - Yield improvements can not keep pace with demand for food and fuel
- Land use change affects climate both by releasing GHG's from soils and from the loss of sequestration ability in soils.
- Need to consider land use change alongside energy emissions in national carbon accounting