Biochar Protocol Development

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We make sustainability real...
Contents

• What is a carbon market protocol?
• Introduction to carbon markets
• Previous protocol history
• How will a biochar protocol work?
• Offset opportunity for biochar
GHG Offset Protocol: Qualify and Quantify

- **Qualify** projects
  - What types of biochar projects are eligible to generate offsets?
  - Where? What technologies? What uses of the biochar?

- **Quantify** GHG reduction
  - How many offset credits?
  - Comparison of baseline vs. project scenario GHG emissions
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In the beginning...
And then there was a loss of will...

GLOBAL CARBON MARKETS

Carbon trading is seen by many as the most effective market-based system to encourage greenhouse gas emission reductions. The World Bank estimated that carbon trading worth a total of $176bn took place during 2011.

Despite struggling carbon prices, a host of new trading schemes have been announced as countries, regions and even big businesses identify the positive impact that carbon trading can have not just on the environment, but economically too.

There are a number of different trading mechanisms in operation but most either auction or assign allowances to emit a quota of CO2. This creates an incentive to reduce emissions so that excess carbon credits can be sold to those who exceed their allocation of emissions.

**Western Climate Initiative (WCI):** The tie-up between California and several Canadian provinces is still under development but will eventually represent a significant chunk of global emissions. Initially CO2 from power stations will be traded but transport emissions could be included in 2015, which would increase the scope of the scheme drastically.

**Regional Greenhouse Gas Initiative (RGGI):** Covers electricity producers in nine US states in the north east of the country including New York and Massachusetts. It has a goal to reduce emissions by 10% before 2018.

**Mexico:** The previous government established strong climate change legislation including a 30% reduction in emissions by 2020. A voluntary cap and trade mechanism has been proposed however there are few details available on its design and a change in government as of December 1, 2012 could affect the plan.

**EU Emissions Trading Scheme (ETS):** The trading scheme covers around half of the group’s emissions and unlike many systems, it includes some emissions from the transport sector, specifically aviation. Charges on aviation apply to any flight using EU airports regardless of whether the airline is based, creating tension with other countries. The EU is targeting an emissions reduction of 20% by 2020.

**China:** The world’s largest emitter will begin regional pilot schemes in seven cities from 2013 onwards with a view to establishing a national market in the future. Heavy emitting industries and electricity producers will be included at first. An agreement with the EU will see some cooperation with the design of China’s trading platforms.

**Tokyo:** The city-wide scheme applies to large office buildings and industrial infrastructure, which are required to use a combination of renewable energy and energy efficiency measures to stay within a prescribed emissions cap.

**South Korea:** An increasing active country in climate change diplomacy, as host of the Green Climate Fund and the Global Green Growth Institute, South Korea will also begin carbon trading in 2015. More than half the country’s emissions will be covered by the scheme, which includes 600 of its largest emitters.

**Taiwan:** The island hopes to reduce emissions back to 2000 levels by 2020 and has requested that 370 of its largest emitters begin reporting their emissions ahead of the launch of a cap and trade system.

**Indonesia:** The country’s mandatory Perform, Achieve and Trade (PAT) scheme differs slightly from the other platforms with industrial emitters given trading energy efficiency targets rather than emission allowances. Over achievers can trade the fruits of their labour with other companies.

**Australia:** The country launched a carbon price of A$23 per tonne of CO2 emitted with 300 of the country’s largest emitters included. A link-up with the EU market is scheduled for 2018.

**New Zealand:** Although the system includes only every second tonne of carbon emitted, the New Zealand trading scheme does cover a wide range of sectors including agriculture, energy, liquid transport fuels and waste. It also rewards sectors such as forestry with credits for absorbing CO2 from the atmosphere.

**UN/Kyoto Protocol:** Countries with emissions reduction targets as part of the Kyoto Protocol trade emissions allowances with each other or can purchase offsets through the Clean Development Mechanism, which in turn funds low-carbon projects in the developing world.
What’s left to support projects...

- Regulatory driven markets
  - US (California x2, RGGI)
  - Canada (Alberta, BC, Quebec)

- Voluntary (pre-compliance) markets
  - American Carbon Registry
  - Verified Carbon Standard
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Previous Protocol History

- Original protocol efforts presented to the public at the 2010 US Biochar Conference

**Goal:** To develop a universally applicable biochar offset protocol for the Alberta Offset System (AOS) and then Voluntary Carbon Standard (VCS)

- Addressed a variety of project scales, diverse feedstocks, and process technologies

www.biocharprotocol.org
Previous Protocol History

- Protocol development created 2 primer documents:
  
  *Biochar Science, Feedstocks and Technology 101*
  
  *Carbon Policy & Markets 101*

- Webinars on primer materials presented to public

- Technical Stakeholder Review Workshops hosted to address outstanding science and carbon policy issues. Feedback collected for protocol revisions:
  
  - IBI Rio de Janeiro 2010 workshop
  
  - Free public webinars summer 2010
Previous Protocol History

- Protocol drafted and entered AOS evaluation and approval process
- Technical Stakeholder Working Group assembled for transparent protocol review process
- AOS identified need for Alberta-specific biochar research and applicability prior to protocol approval
  - Alberta research group making progress on biochar use and application
  - Protocol re-submittal part of this initiative
- Further gap for pursuing broader approval

Enter IBI, The Climate Trust and Blue Moon Fund
Contents

- What is a carbon market protocol?
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- Previous protocol history
- How will a biochar protocol work?
  - Scope
  - Carbon stability test
  - Technological benchmark
  - Ownership of credits
- Next steps
Funding & Project Partners

- The Climate Trust
  - Peter Weisberg, Teresa Koper
- International Biochar Initiative
  - Debbie Reed, Stefan Jirka, Wiley Barbour
- The Prasino Group
  - Keith Driver
- Carbon Consulting LLC
  - John Gaunt
Emission Reduction Pathways
### Carbon Stability

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A. Budai; A. R. Zimmerman; A.L. Cowie; J.B.W. Webber; B.P. Singh; B. Glaser; C. A. Masiello; D. Andersson; F. Shields; J. Lehmann; M. Camps Arbestain; M. Williams; S. Sohi; S. Joseph, Miguel Rodriquez
Further Considerations

• Offsets must “do no harm”
  • Biochar in soils must meet the IBI’s “Standardized Product Definition and Product Testing Guidelines”
  • Use of sustainable feedstocks to ensure no leakage of the benefit
  • Projects must be in industrialized countries and pass all air emissions standards

• Producer or final user of biochar can claim ownership of emission reductions
  • Must clearly document that the other has given them the right to do so.
Next Steps

- Completion of the ACR methodology
  - Technical review webinar on October 28th, 2013
  - Public posting and comment period extending through November 6th, 2013
  - Final review and approval to follow

- California protocol to be adapted
  - Proposal solicited to adapt biochar protocol for local projects to help meet CEQA compliance
  - Adapt protocol for use under AB-32
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What Offsets Mean to Biochar

• Value of 1 tonne of biochar
  • Pricing ranges from $400 - $2,000 per tonne

• Volume of offsets per tonne of biochar
  • Assume 70% stable carbon with 44/12 conversion of C to CO2e
  • Landfill diversion of C&D waste is 4 tonnes CO2e per tonne (25% biochar yield)

• Value of offsets per 1 tonne of biochar
  • With offset pricing at $12 per tonne of CO2e
  • With landfill diversion ≈7 tCO2e or $84 per tonne of biochar
BEAST is:

- **Consulting Services** to help clients develop and realize the value of environmental assets (RFS2 RINs, LCFS credits and carbon)

- **Workshop(s)** for sharing lessons learned and best-practices, for tracking ongoing policy requirements and asset prices and for sharing project management design
1. Client shares their goals specific to the U.S. market
   - Federal Renewable Identification Number (RIN) and/or
   - California Low Carbon Fuel Standard (LCFS) market and/or
   - Carbon offsets (California, Canada or voluntary) and/or
   - Renewable Energy Certificate (REC) state issued

2. Project intake session

3. Proposal submitted to client outlining potential asset eligibility

4. Asset feasibility and value assessment

5. Asset development process
   - Carbon: manage validation and verification process

6. Project submission to appropriate entity
   - Manage asset eligibility process with entity

7. Entity / entities issues eligibility decision

8. Marketing the asset
Service Range
Value Add of BEAST
1. Biochar particle is porous; its high surface area allows it to capture and retain many times its weight in water.

2. It increases nutrient efficiency by attracting cations (positively charged ions, which include plant nutrients like calcium, magnesium, and potassium) and anions (negatively charged ions, which include nitrates and phosphates), slowing them with the soil food web.

3. Biochar is resistant to biological and environmental decay. It can last in the soil for hundreds to thousands of years, making it an effective form of carbon sequestration.

4. Provides a secure habitat for fungi, bacteria, and other microorganisms.

5. Enhances soil aeration.

Properties that make biochar valuable in agriculture:

Biochar:
- A sustainably made charcoal substance that increases soil fertility (and sequesters carbon)

How to make biochar:
1) Fast-growing willow trees are cut down; 2) A chipper turns the timber into wood chips; 3) The wood chips are shoveled into a feed conveyor; 4) The conveyor maintains the biochar's temperature.
Thank you!

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