Teaching Segment 2: Other Carbon Market Schemes

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT: CAPACITY BUILDING AND TRAINING PROGRAMME

CARBON MARKETS

www.itpowergroup.com

CARILEC

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

THE VOLUNTARY CARBON MARKET

Scope

- Applicability of the voluntary markets
- Differences between the voluntary market and the regulatory market
- Identification of market players
- Activities under the voluntary market
- Schemes and standards in the Voluntary market: of its characteristics, applicability and contribution to the carbon market.
- Costs of the voluntary market
- Current issues of the voluntary markets

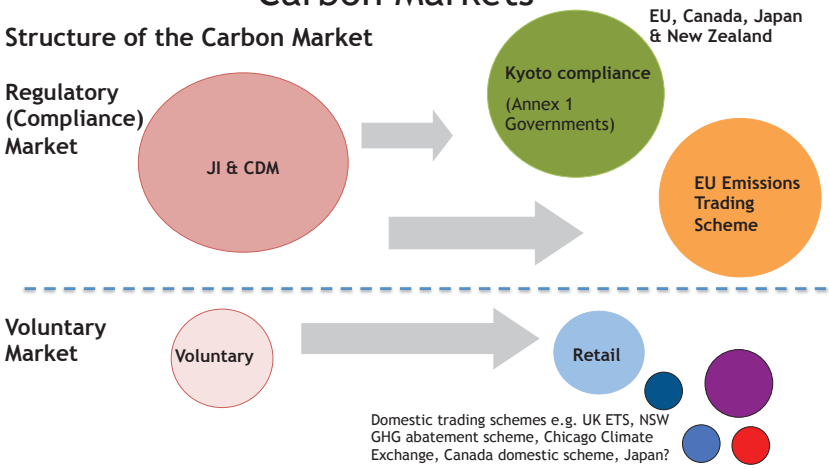
Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Applicability of the Voluntary Carbon Markets

Applicability of the Voluntary Carbon Markets

Structure of the Carbon Market



Applicability of the Voluntary Carbon Markets

Project-based trading concept

Project Host

Companies or government implementing GHG abating projects involving:

- RE
- EE
- Methane Capture
- Reforestation
- Etc

- Project Activities create ERs
- Project host sell ERs to help finance the project activities

$$$

ERs

Emission Reduction Buyer

- Governments, companies or other buy ERs from project activities
- Some buy ERs to help satisfy mandatory obligations
- Others buy ERs to apply towards voluntary commitments

Applicability of the Voluntary Carbon Markets

Carbon Market Programmes

Carbon Market Programme	Voluntary vs Regulatory	Comments
Clean Development Mechanism (CDM)	Regulatory	Certified Emission Reductions (CERs) can be used for compliance with Kyoto commitments
European Union Emission Trading System (EU ETS)	Regulatory	EU ETS regulates emissions from power generation and other industries in the EU
Voluntary Carbon Markets	Voluntary	Companies, individuals and events buy emission reductions to reduce their carbon footprint

Applicability of the Voluntary Carbon Markets

Characteristics of the Voluntary Markets:

- Transactions in the voluntary markets **are not required by regulation** but are instead **driven by companies and individuals** that take responsibility for **offsetting** their own emission as well as entities that purchase "**pre-compliance**" offsets.
- They **co-exist** with the compliance markets that are driven by regulated caps on GHG emissions

Voluntary carbon markets involves purchases that are made voluntarily by the buyer - outside of the compliance market

They enable businesses, governments, NGOs, and individuals to offset their emissions by purchasing carbon offsets.

Applicability of the Voluntary Carbon Markets

What is being traded?

- Emission Reductions (ERs)
- Measured in tonnes of Carbon Dioxide (tCO2)
- Usually the unit: tCO2
- Also called offset or Verified or Voluntary Emission Reductions (VER)

Applicability of the Voluntary Carbon Markets

Concept of Voluntary Emission Reduction (VER)

- VER is a type of carbon offset exchange in the voluntary of "Over-the-Counter" (OTC) market for carbon credits
- VERs are usually created by projects which have been verified outside the Kyoto Protocol
- 1VER = 1 tonne of CO2e emissions
- VERs may be developed and calculated in compliance with one of the several VER standards. These set out rules defining how emission reductions are measured. Standards provide assurance for buyers of VERs. At a minimum, all VERs should be verified by an independent third-party.

Applicability of the Voluntary Carbon Markets

- Two Voluntary Carbon Markets

Cap-and-Trade Market

Cap-and-Trade: a limit on emissions of countries, regions, sectors.

Parties self impose legally-binding GHG emission reductions targets

E.g. Chicago Climate Exchange (CCX)

Offset Market

People invest in ERs for a variety of reasons: meeting their own self imposed ER targets; help to address climate change, help reduce their carbon footprint

Market made of purely voluntary buyers

E.g. Voluntary Carbon Standard

Applicability of the Voluntary Carbon Markets

- Voluntary Offset Market
  - Offset Market (buyer driven market) is made up of two main types of buyers:

Purely Voluntary Buyers

- Organisations, companies or individuals not subject to mandatory emission reductions
- Purchase CO2 emission credits and remove them from the market in order to offset their own emissions
- e.g. Offseting emission from a flight from Jamaica to Cuba or offsetting annual emissions of a 4x4
- Motivation : ethical thinking or corporate social responsibility

Pre-Compliance Buyers

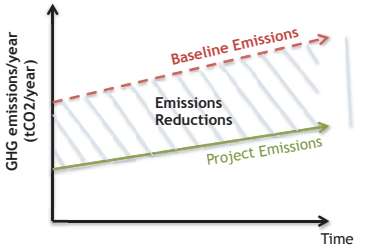
- Companies buying credits in anticipation of a mandatory market being established in the future
- Buying now = lower price
- Many national/regional mandatory compliance programmes not functioning yet but encouraging pre-compliance buyers (e.g. California's forest-friendly cap-and-trade programme will start in 2012

Applicability of the Voluntary Carbon Markets

Voluntary Market

- Uses carbon credits:
  - Generated through a project based system
  - Uses a Baseline – Project Emission Similar to CDM procedures (many projects use same methodologies)
  - Additionality verified by independent third party
- The volume of the carbon credits transacted voluntary in 2010 represents less than 0.3% share of global carbon market

Projects that reduce or avoid carbon emissions are the source of credits in the voluntary carbon markets



Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Differences between the Voluntary Carbon Market and the Compliance Carbon Market

Voluntary vs. Compliance

	Voluntary	Compliance
Commodity	VER	CER
Price	Variable accordingly with standard and project (typically ~ USD2-6)	Higher (~ USD11)
Coverage	Voluntary / Worldwide	Annex 1 counries
Market Size	Smaller	Larger
Volume	2009: 98 MtCO2 2010: 131 MtCO2	2009: 7,437 MtCO2 2010: 6,692 MtCO2
Regulation	No formal regulation	UNFCCC EB
Methodologies	CDM, Verified Carbon Standard (VSC), Gold Standard, others…	Approved by EB
Independent Third Party	CDM DOEs and others	DOEs and EB
Participation requirements/ transaction costs	Variable / Less than regulatory market programmes, but can be high depending on standards	Rigorous/high

Voluntary vs. Compliance

- VER: voluntary emission reduction – name varies accordingly
- with the standard
- Price: generally lower than CERs as CERs can also be used in the voluntary market. Their quality (additionality) higher - certified by the DOE and EB
- Volume: difficult to estimate as there are approximately 20 standards and the transactions are not always public neither are they done through a registry. However, a substantial decrease is expected to have happened in 2010

Voluntary vs. Compliance:

Advantages of Voluntary Schemes Vs. CDM

- Less bureaucratic / reduced costs
- Cheaper to generate credits
- Flexibility and Innovation – niche/new sectors not convered by CDM
- Can contribute more to sustainable development
- Value for co-benefits: environmental & social contributions
- Easier to register forestry projects

Voluntary vs. Compliance:

Some Issues/Constraints of the Voluntary Market

- Generally lower price (but not always)
- Quality assurance
- Transparency
- Many different buyers – market is changing
- Many standards and registries: can be confusing
- Market is still small – just 0.3% of the global carbon market

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Identification of Market Players

Identification of Market Players

Who buys carbon credits?	• Companies, NGOs and individuals
For what?	• Offsetting activities and products (travel, books, music festivals) • Pre-compliance with mandatory schemes
Why?	• Competitive advantage: public relations, branding, Corporate Social Responsibility • Investment/Resale

Identification of Market Players

Buyers

- Business for profit
  - Retirements, voluntary offset
  - Resale of voluntary buyers
  - Pre-compliance motive
  - Resale to pre-compliance buyers
- Governments (retirements, voluntary offset)
- NGOs/non-profit organisations
  - Retirement, voluntary
  - resale
- Individual (retirement, voluntary offset)

Identification of Market Players

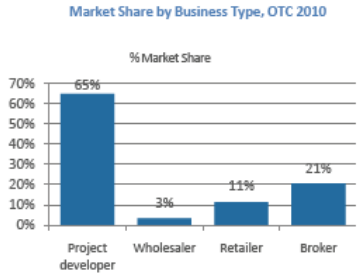
Suppliers

- Project developers: develop GHG emission reduction projects and sell the VERs
- Wholesalers: only sell offsets in bulk and often have ownership of a portfolio of credits
- Retailers: sell small amounts of credits to individuals or organizations, usually online, and might have ownership of a portfolio of credits.
- Brokers: Do not own credits, but facilitate transactions between sellers and buyers.

Identification of Market Players

Suppliers

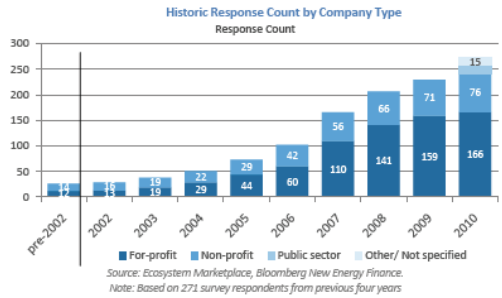
- Many organizations have several hats
- In 2010 project development dominated the business type categories as originators entered the market to meet the growing demand for forest credits
- Wholesalers market share dropped from 2009 to 2010 due to the low margin marketplace (project developers reported that over half of their transacted volumes were purchased by end-users with retirement or pre-compliance motives)



Source: Bloomberg, 2011

Identification of Market Players

Type of Suppliers



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 271 survey respondents from previous four years

Identification of Market Players

Voluntary Carbon Market Participants "Cautiously Optimistic"

- In 2010:
  - many voluntary buyers returned to the voluntary carbon markets to make new commitment to reduce and offset their emissions
  - Suppliers expect with cautious that demand would continue strong as the economy recovers and the market continues to mature
- Forecast of suppliers for 2011 - Transactions: 213 MtCO2 (83MtCO2 more than in 2010)
- Through 2015:
  - Suppliers predict a market size of 406 MtCO2e

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Activities under the Voluntary Market

Activities under the Voluntary Market

Examples of Project Activities in the Voluntary Market

Activity Category	Project Type
Renewable Energy: • Grid connected • Off grid	 • Small hydro (run-of-river) • PV home lighting systems
Energy Efficiency • Grid connected • Off grid	 • Compact florescent lamps • Fuel efficiency wood stoves
Methane Capture • Landfill • Agricultural	 • Landfill gas to energy • Pig manure to energy
Forestry • Trees planting • Conservation	 • Watershed reforestation • Forest protection
Others	• Bicycle sharing (NEW!!)

Activities under the Voluntary Market

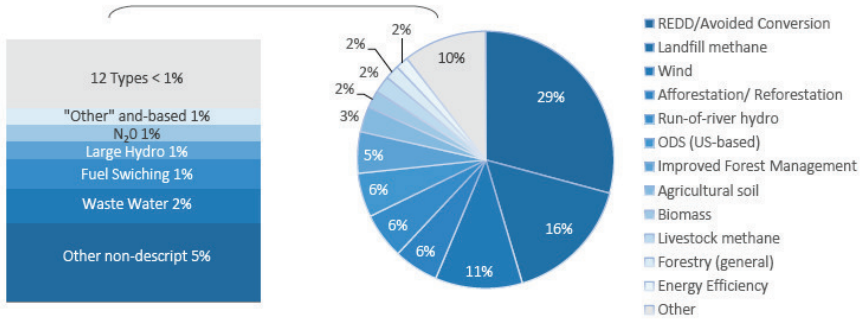
Project Types

Top 3

2009	2010
Landfill methane	REDD (Emission Reductions from Deforestation and Forest Degradation) / Avoided Conversion
Afforestation/Reforestation	Landfill methane
Wind	Wind

Activities under the Voluntary Market

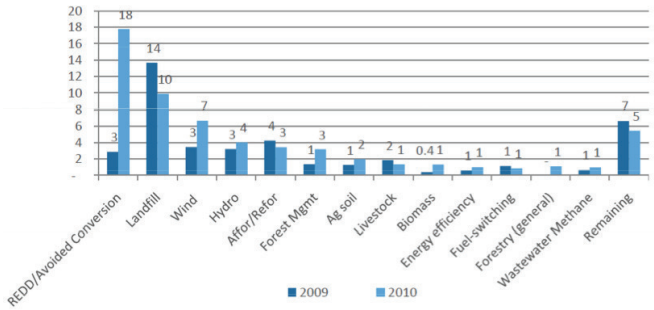
Transaction Volume by Project Type



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Activities under the Voluntary Market

Transaction Volume by Project Type: 2009 vs 2010

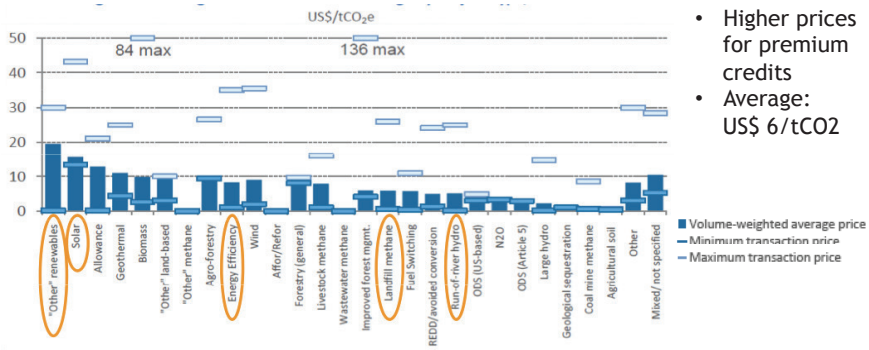


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 608 observations.

Activities under the Voluntary Market

Voluntary Carbon Credits: Price per Type of Activity

Average credit Price and price range by Project Type



- Higher prices for premium credits
- Average: US$ 6/tCO2

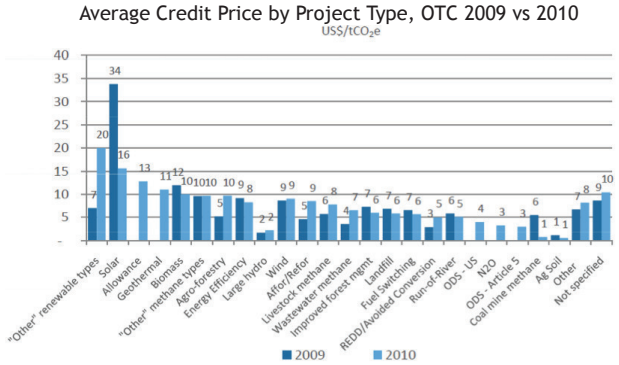
Activities under the Voluntary Market

Price Related to Project Characteristics:

- Project **type** is one of the most significant factors influencing price
- Two of the highest average prices:
  - Solar ($16/tCO2e); and
  - biomass projects ($10/tCO2e).
- Medium: ($4-8/tCO2e) forestry, run-of- river hydro and landfill
- Lowest:
  - large hydro ($1.7/tCO2e); and
  - agricultural soil credits ($1.2/tCO2e)

Activities under the Voluntary Market

Price Related to Project Characteristics:



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: 2009 figures based on 326 observations, 2010 figures based on 461 observations.

Activities under the Voluntary Market

Price Related to Project Characteristics:

- Project **location** can also influence
- Project environmental impacts
- Contribution to local community – social impacts
- Project size
- Which standard used: e.g. Gold Standard or VCS for renewables, Plan Vivo for Forestry, SOCIALCARBON for projects with social benefits

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Schemes & Standards under the Voluntary Market

Schemes & Standards under the Voluntary Market

- Various standards, certification processes, and emissions registry services exist, but there is no universally accepted standard for what constitutes an offset in the voluntary market, which is unregulated
- Some standards are now widely recognized and accepted as a designation of credibility. Examples include: the Voluntary Gold Standard; the GHG Protocol for Project Accounting; and the Climate, Community and Biodiversity Project Design Standards

Why are standards important?

- These set out rules defining how emission reductions are measured. Standards provide assurance for buyers of VERs.

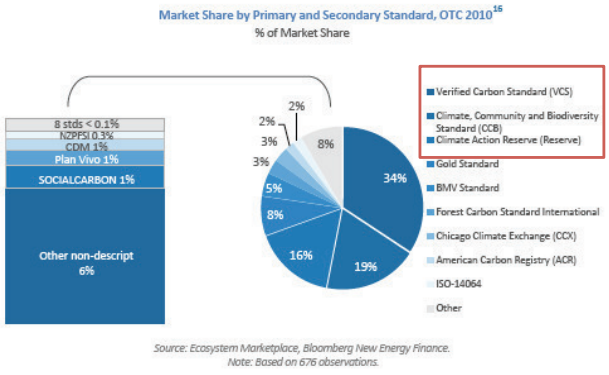
Schemes & Standards under the Voluntary Market

Existing Schemes & Standards:

- Voluntary Carbon Standard (VCS);
- Climate Action Reserve (Reserve)
- Voluntary Gold Standard;
- Chicago Climate Exchange (CCX)
- BMV standard
- Climate Community and Biodiversity Standard (CCB)
- Forest Carbon Standard International
- American Carbon Registry (ACR)
- ISO-14064
- Plan Vivo
- Social Carbon

Schemes & Standards under the Voluntary Market

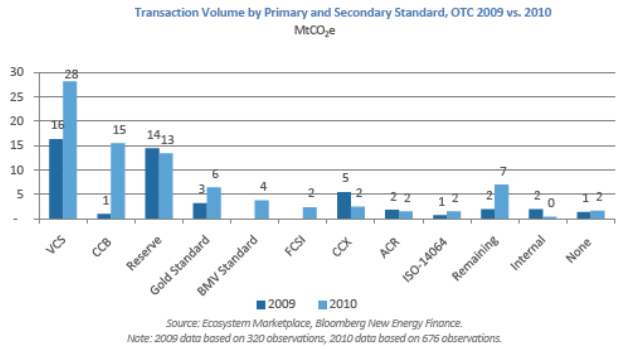
Standards and Market Share:



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 676 observations.

Schemes & Standards under the Voluntary Market

Standards and Market Share:



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: 2009 data based on 320 observations, 2010 data based on 676 observations.

Schemes & Standards under the Voluntary Market

Programme of Activities

- Buyers want to support small-scale community-based activities
- Impact on climate and **communities but face** high risks and costs to reduce emissions from small sources

PoA aims to improve regional representation and reduce costs for household-level activities like efficient cook stoves, solar water heaters, biogas and CFL installation to overcome the small-scale threshold and become economically viable

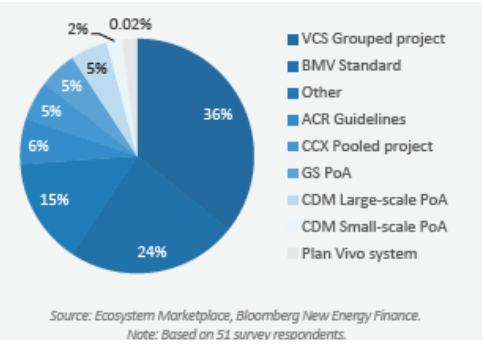
- Aggregation Guidelines:
  - Voluntary Carbon Standards Grouped Project Guidelines (March 2011)
  - Gold Standard Voluntary PoA

Schemes & Standards under the Voluntary Market

Programme of Activities Market Share

- transacted 16.1 MtCO2e in 2010
- Guidelines under ACR and CCX were mostly used for land-based projects;
- Gold Standard Voluntary PoA boosted the standard's core mission to implement sustainable energy at a meaningful scale

Programmatic or Project Grouping Guidelines Use 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 51 survey respondents.

Schemes & Standards under the Voluntary Market

VOLUNTARY CARBON STANDARD (VCS)

Voluntary Carbon Standard

Voluntary Carbon Standard (VCS)

- The Voluntary Carbon Standard has been developed by The Climate Group and the International Emissions Trading Association (IETA). Version 1 of the VCS was released for consultation on 2 March 2006
- The VCS Standard provides a global standard for GHG emission reduction and removal projects. It uses as its core the requirements set out in ISO 14064-2:2006, ISO 14064-3:2006 and ISO 14065:2007
- Used in more than 600 projects worlswide
- Updated version: V3.1, 15 July 2011

Voluntary Carbon Standard

Voluntary Carbon Standard (VCS)

- aims to ensure that all voluntary emission reductions projects that want to trade in Verified Carbon Units (VCUs) are independently verified to meet specific criteria and that these will represent "*real, quantifiable, additional and permanent project-based emission reductions*".
- The VCS provides protocols and criteria to certification entities and project developers on the specifications for creating, verifying, and registering VCUs.
- The VCS has a registry managed by the Bank of New York which is used to register, transfer and retire VCUs from the market.

Voluntary Carbon Standard

Scope of the VCS Programme includes:

- The six Kyoto Protocol greenhouse gases.
- Ozone-depleting substances as set out in VCS document ODS Requirements.
- Project activities supported by a methodology approved under the VCS Program through the methodology approval process.
- Project activities supported by a methodology approved under a VCS approved GHG program, unless explicitly excluded under the terms of VCS approval.

Excludes: Emission reduction under obligation or reduce HFC

Voluntary Carbon Standard: Definitions

VCS Definitions

- CSA: (Verified Carbon Standard Association): As EB in the CDM but not review individual projects (as do the CDM, JI and Gold Standard)
- VVB(Validation/Verification Body): An organization approved by the VCSA to act in respect of providing validation and/or verification services in accordance with the VCS rules
- VCU(Verified Carbon Unit): A unit issued by, and held in a VCS registry representing the right of an accountholder in whose account the unit is recorded to claim the achievement of a GHG emission reduction or removal in an amount of one (1) metric tonne of CO2 equivalent that has been verified by a validation/verification body in accordance with the VCS rules.
- Proof of right: The document(s) demonstrating the entity's right to all and any GHG emission reductions or removals generated by the project during the project crediting period or verification period, as the case may be. Distinct from right of use

Voluntary Carbon Standard: Crediting Period

VCS project crediting period

- For non-AFOLU projects and ALM projects focusing exclusively on reducing N2O, CH4 and/or fossil-derived CO2 emissions: A maximum of ten years which may be renewed at most twice
- For all other AFOLU projects other than such ALM projects:
  A minimum of 20 years up to a maximum of 100 years, which may be renewed at most four times with a total project crediting period not to exceed 100 years.

- Renewal of the project crediting period:
  - A full reassessment of additionality is not required.
  - The validity of the original baseline scenario shall be demonstrated
  - The updated project description shall be validated in accordance with the VCS rules.

Voluntary Carbon Standard

VCS and other GHG programmes

- Projects may be registered sequentially under the VCS Program and an approved GHG program
- Project proponents shall not claim credit for the same GHG emission reduction or removal under the VCS Program and another GHG program.
- Projects registered under other GHG programs are not eligible for VCU issuance beyond the end of the total project crediting period under those programs
- Projects rejected by other GHG programs due to procedural or eligibility requirements can be considered under the VCS Program. But has to:
  - Provide reasons and documents of being rejected;
  - Full VCS validation.

Schemes & Standards under the Voluntary Market

CLIMATE ACTION RESERVE

Climate Action Reserve

- The Climate Action Reserve is the new name for the California Climate Action Registry (California Registry): the California Registry focused on GHG emission inventories and the Reserve is focused on developing standardized GHG reduction project protocols, serving as a registry for GHG reduction projects, and tracking GHG offsets through a publicly accessible database.
- National offsets program focused on ensuring environmental integrity of GHG emissions reduction projects to create and support financial and environmental value in the U.S. carbon market
- It does this by:
  - establishing high-quality standards for quantifying and verifying GHG emissions reduction projects;
  - overseeing independent third party verification bodies;
  - issuing carbon credits generated from such projects; and
  - tracking the credits over time on a transparent, publicly-accessible system

Climate Action Reserve

- Climate Action Reserve's GHG emissions reduction project protocols provide regulatory-quality guidelines for project development and the quantification of carbon offset credits, known as Climate Reserve Tonnes (CRT)
- Different project protocols that define the criteria against which projects are verified
- Adopted protocols:
  - 12 protocols have been adopted: Cola Mine Methane, Forest, Mexico Landfill, Mexico Livestock, Nitric Acid Production, Organic Waste Composting, Organic Waste Digestion, Ozone Depleting Substances, Rice Cultivation, Urban Forest, U.S. Landfill and U.S. Livestock
  - 3 protocols are in progress;
  - issuing carbon credits generated from such projects; and
  - tracking the credits over time on a transparent, publicly-accessible system

Climate Action Reserve

- Adherence to the Climate Action Reserve's standards ensures emissions reductions associated with projects are real, permanent and additional.
- The Climate Action Reserve only registers projects that have been independently verified as adhering to its project protocols.
- It also assigns unique serial numbers to all generated carbon credits. This prevents the possibility of double counting and assures buyers that when a CRT has been retired, it cannot be sold or transferred again and has created a real and permanent offset.
- All project information is made publicly available through the Climate Action Reserve system
- CDM methodologies are not accepted by the Climate Action Reserve - only project protocols that are developed by the Climate Action Reserve are accepted

Climate Action Reserve

Differences between the Climate Action Reserve and Chicago Climate Exchange

Chicago Climate Exchange (CCX)

is a voluntary, for-profit GHG trading system; CCX members agree to legally binding voluntary GHG reduction targets.

the CCX has its own set of protocols for quantifying and certifying emission reductions from offset projects.

However, offset credits comprise only a fraction of the total number of tradable emission certificates issued by the CCX (the majority are emission allowances)

Climate Action Reserve

is not an exchange.

is a non-profit registry that serializes and tracks GHG reductions generated in adherence to the Reserve protocols and independently verified by accredited verification bodies.

Although offset credits may be transferred between accounts in the Reserve registry, credits are not traded through the Reserve system and the Reserve plays no role in setting the price for CRTs.

CRTs are sold under the Gree Exchange and Chicago Climate Fuures Exchange (CCFE)

Climate Action Reserve

Relationship between the Reserve and the Voluntary Carbon Standard

- Reserve is the first GHG program in the U.S to be approved by the VCS;
- all of the Reserve's project protocols are approved methodologies under the VCS - meaning that all reductions verified under Reserve protocols and registered as CRTs on the Reserve (excluding, for the time being, CRTs issued under Version 2.1 of the Forest Project Protocol) are eligible to be converted to Voluntary Carbon Units (VCUs)
- The recognition of CRTs as VCUs is only a one-way process – VCUs are not recognized by the Reserve as CRTs

Schemes & Standards under the Voluntary Market

VOLUNTARY GOLD STANDARD

Voluntary Gold Standard

What is?

- An independent non-profit organization under Swiss law that operates a certification scheme for premium quality carbon credits
- Endorsed by over 68 NGOs
- Based in Geneva, Switzerland
- A **tool** for the promotion of best practice project activities with a proven contribution to both sustainable development and climate change mitigation, in both the compliance and voluntary markets
- Gold Standard provides a quality assurance label for projects and credits and ensures contribution to sustainable development and climate protection

Voluntary Gold Standard

Eligible projects types

- Renewable Energy Supply category or End-use Energy Efficiency Improvement
- Examples:
  - Renewable energy -- electricity, heat - Biomass, biogas, and liquid biofuels - Landfill gas
  - Agro-processing
  - Methane capture
  - Hydroelectricity
  - Energy Efficiency
- For all the eligible project types a CDM project can also be registered as GS project and generate GS CER's

Voluntary Gold Standard

Sustainable development Assessment under Gold Standard

- SD assessment is the key differentiator between UNFCCC CDM process , other Voluntary GHG offset standards
- Gold Standard Approach for Sustainability Assessment:
  - A combination of *self-assessment* and *stakeholder consultation:*
    - 'Do no harm' assessment
    - Sustainable Development Matrix;
    - Stakeholder consultation;
    - Sustainability Monitoring Plan
  - Host country sovereignty fully respected

Voluntary Gold Standard

Sustainable development Assessment under Gold Standard

"Do no harm" Assessment
- 11 UNDP Safeguarding Principles
- PP identified sustainable mitigation measures for serious "risks"

Stakeholders Consultation Guidelines
- Interactive, bottom-up approach
- 2 round:1) Local Stakeholder Consultation; 2) Stakeholder Feedback Round

Sustainable Development Matrix
- All 12 indicators scores, justified and referenced
- Includes Do no harm risks
- Linked to the MDGs

Sustainable Monitoring Plan
- Includes non-neutral indicators + mitigation measures
- Chosen monitoring parameters must be relevant

Voluntary Gold Standard

Why Developing a Gold Standard project?

- Strong market recognition for Gold Standard
- Premium price
- Sustainable development benefits for local Communities
- High end buyer demand due to the quality and additional SD benefits offered by Gold Standard credits
- Projects certified under a robust, rigorous and credible standard, such as the Gold Standard, are more likely to be eligible for future compliance schemes
- The only standard to measure, monitor and verify sustainable development criteria in all projects throughout the crediting lifetime of the project

Schemes & Standards under the Voluntary Market

CHICAGO CLIMATE EXCHANGE (CCX)

Chicago Climate Exchange (CCX)

- It's the North America's largest and longest running greenhouse gas emission reduction program.
- Established 2003 as a voluntary membership-based Cap-and Trade system in the US
- Manu US companies participated in anticipation of US Federal Climate Change Bill
- When Bill failed in 2009 oversupply of allowances caused the price of allowances to crash (US $0.05)
- The CCX cap-and-trade system ended in December 31, 2010

Chicago Climate Exchange (CCX)

Chicago Climate Exchange Offsets Registry Programme

- In 2011, CCX launched the distinct Chicago Climate Exchange Offsets Registry Program for voluntary emission reductions (VERs) that is set to run for 2011 and 2012
- Although the CCX has its own set of protocols for offset projects, projects that vary from or do not meet a specific protocol (such as CDM projects) may be approved on a case-by-case basis by a standing committee of industry experts
- The CCX will maintain a registry for offsets based on the existing registry.
- Participants interested in acquiring registered offsets may apply to become a CCX Registry Account

Chicago Climate Exchange (CCX)

Offset Registration

- Step 1: Eligibility
  - All projects must submit a CCX Project Implementation Document
  - All projects must receive a Project Approval Letter as evidence of program validation prior to initiating verification
  - Verifiers should request a copy of the letter prior to verification to ensure that the project has been validated by CCX for verification.
- Step 2: Verification
  - Verification is required of all projects to ensure that all program requirements have been met.
  - All verification must be performed by CCX Approved Verifier
- Step 3: Registration
  - Once the verification report and associated documents have been received, CCX Staff will review all the associated documents and the verification report to ensure all requirements have been met.
  - Provided all of the requirements have been met, CCX will issue offsets into the designated registry account

Schemes & Standards under the Voluntary Market

CLIMATE, COMMUNITY AND BIODIVERSITY (CCB) STANDARDS

Climate, Community and Biodiversity (CCB) Standards

- CCB Standards are a set of project-design criteria for evaluating **land-based carbon mitigation projects and their community and biodiversity co-benefits**;
- managed by the Climate, Community and Biodiversity Alliance (CCBA), a consortium of international non-governmental organizations.
- The CCB Standards **do not** generate tradable offset certificates but are frequently applied with a carbon-accounting standard like the CDM or VCS.
- In 2009, the CCBA and CARE facilitated development of the REDD+ Social and Environmental Standards (REDD+ SES) to assess the social and environmental performance of government-led REDD+ programs. Version 1 of the REDD+ SES was released in June 2010 and is being applied in pilot countries.

Climate, Community and Biodiversity (CCB) Standards

- Variety of users:
  - Project developers and other stakeholders – Communites, NGOs, agencies etc. use the CCB standards development of projects that deliver a suite of environmental and community benefits *(e.g., a reforestation project that provides the environmental and social co-benefits identified by the Standards may attract funds from a variety of groups: private investors for the carbon credits, governments for sustainable development and philanthropic organizations for biodiversity conservation)*
  - Project investors and offset buyers: Private companies, multilateral agencies and other funders investing in carbon credits can use the CCB Standards as a project screen (identify projects that actively address environmental and social performance factors, lowering the risks to effective project implementation)

Climate, Community and Biodiversity (CCB) Standards

- Variety of users (Cont.):
  - Governments - can use the CCB Standards to ensure that projects within their boundaries will contribute to national sustainable development goals. Also, donor governments can use the Standards to identify Official Development Assistance (ODA) projects that efficiently satisfy multiple international obligations, such as the Millennium Development Goals and the UN conventions on Climate Change and Biological Diversity.

- Applicability:
  - CCB can be applied in any geographical area regardless of start date or size
  - Can be used for projects funded with either private or public investment, and they apply to projects that generate carbon credits for either compliance or voluntary markets.
  - CCBA does not issue quantified emissions reductions certificates and therefore encourages the use of a carbon accounting standard (such as CDM or VCS) in combination with CCB Standards

Climate, Community and Biodiversity (CCB) Standards

- Roles:
  - **Project design standard:** The CCB Standards provide rules and guidance to encourage effective and integrated project design.
    - can be applied early on during a project's design phase to validate projects that have been well designed, are suitable to local conditions and are likely to achieve significant climate, community and biodiversity benefits
    - helps to build support for the project at a crucial stage and attract funding or other assistance from key stakeholders
  - **Multiple-benefit standard**: can be applied throughout the project's life to evaluate the social and environmental impacts of a land-based carbon project.
    - can be combined very effectively with a carbon accounting standard such as, for example, the Clean Development Mechanism (CDM) or the Voluntary Carbon Standard (VCS).
    - the CCB Standards provide a basis for evaluating a project's social and environmental impacts while the carbon accounting standard enables verification and registration of quantified greenhouse gas emissions reductions or removals

Schemes & Standards under the Voluntary Market

FOREST-BASED STANDARDS

Forest-Based Standards

- Brasil Mata Viva (BMV) standard
- Plan Vivo: project specific methodology
- CarbonFix Standard
- Etc..

Forest-exclusive standards made up one third of all active standards in 2010

Forest-Based Standards

- The Brazilian Brasil Mata Viva (BMV) Standard:
  - is a payment for environmental services standard.
  - single BMV Methodology provides resources for the introduction of **new sustainable technologies for land use and for the establishment of processing units that will add value to the rural production, recomposition and recovery of areas.**
  - goal is to create solutions for sustainable development focused on curbing deforestation and reducing emissions.
  - BMV projects are supervised and supported by three divisions of the government, prosecutors and the Brazilian Institute of Environment and Renewable Natural Resources.
  - Brasil Mata Viva Methodology is already a success: first nucleus will benefit over 1,000 rural producers in areas ranging from 15ha to 10.000 ha.

Forest-Based Standards

- Plan Vivo:
  - program designed for community-based forest management and agroforestry payments for ecosystem services projects.
  - The system was created over a decade ago by the Edinburgh Center for Carbon Management and is now developed and overseen by a Scottish charity, the Plan Vivo Foundation.
  - There are currently 5 fully operational Plan Vivo projects in Mexico, Uganda, Mozambique, Tanzania and Nicaragua and several upcoming projects in developing countries including Malawi, Cameroon, Ethiopia, and Nepal.
  - Plan Vivo maintains a listing of projects on its website and lists credits (Plan Vivo Certificates) on the Markit Environmental Registry.

Forest-Based Standards

- CarbonFix Standard:
  - developed in 2007 by CarbonFix, an independent non-profit organization.
  - applies to projects related to afforestation, reforestation, natural regeneration and agro-forestry which have a demonstrated commitment to socio-economic and ecological responsibility.
  - Project developers using the standard manage their certification processes over the ClimateProjects platform, which also allows them to issue their carbon credits in Markit – CarbonFix's official credit registry.
  - In January 2011, the International Carbon Reduction and Offsets Alliance (ICROA) recognized CarbonFix Standard as suitable for use under its Code of Best Practice

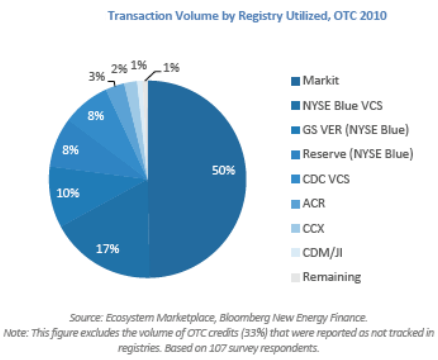
Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Registries & Tradding Platforms

Registries

- Verified carbon reduction are converted to a saleable asset
- Credits have unique ID
- Transferred from seller to buyers account
- Examples: Gold Standard Registry, VCS Registry, Markit Registry, ACR, J-VER and others
- Many Standards have their own registry



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: This figure excludes the volume of OTC credits (33%) that were reported as not tracked in registries. Based on 107 survey respondents.

Trading Platforms

Examples:

Exchange	Host Company	Credits Traded	Formal Affiliations with Voluntary Standards, Registries, Schemes	Launch Date of VER Trading	VER-related Fees (US$ except where otherwise specified)
Africa Carbon Exchange	ACX	CERs, VERs (multiple standards)	To Be Determined	2011	Unknown
Carbon Trade Exchange	CTX	VERs (multiple standards)	Markit	2010	7% (5% on the sell side and 2% on the buy side)
China Beijing Environment Exchange	China Beijing Equity Exchange	VERs (multiple standards)	BlueNext	2008	Unknown
Climex	Climex	EUAs, CERs, ERUs, RECs, VERs (multiple standards)	None	2007	Auctioneer: 1.75% of transacted amount; Buyer: 1-1.75% of transacted amount
Green Exchange	Green Exchange Holdings	CRTs, EUAs, CERs, RGGI, NOx and SO_2 futures and options emissions allowances	Climate Action Reserve	2010	$2.50/contract (Contract = 1,000 CRTs)
Tianjin Climate Exchange	InterContinentalExchange and The China National Petroleum Company	VERs and other major pollutants (CDM and EMC development consulting)	To Be Determined	2009	Unknown
World Green Exchange	World Energy Solutions, Inc.	RECs, RGGI, VERs (multiple standards), VERRs (Canada's GHG CleanProjects Registry), Alberta Offsets	Markit, Gold Standard, Canadian Standards Association (GHG CleanProjects Registry), BMV Standard	2008	Brokerage fee: 1-1.5% of total transaction per side

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Costs of the Voluntary Market

Costs of the Voluntary Markets

Market Participation Costs:

Activity	Estimates Example Costs - $ US		
	Full Scale CDM Project	Small Scale CDM Project	Voluntary Gold Standard*
Project Design Document Preparation	45,000	20,000	7,500
Stakeholder Consultation & Host Country Approval	10,000	5,000	2,500
Validation	30,000	12,500	5,000
Registration Fee	30,000	5,000	N-A
Transaction Negotiation & Contrating	20,000	10,000	5,000
Project Monitoring (Periodic)	Varies	Varies	Varies
Initial Verification	15,000	7,500	2,500
Periodic Verification (Cost per verification)	10,000	5,000	2,500
Approximate Total:	>160,000	>65,000	>25,000

*This illustration is for a "micro-scale" project <5,000 tCO2/Yr. The costs for larger-scale projects would tend to be substantially higher

Costs of the Voluntary Markets

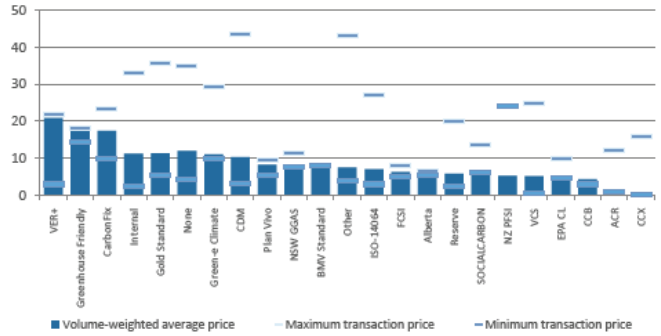
Example of Potential Revenue After Participation Costs

Project Example	Total Installed System Cost	Net ER Revenue, 1st Year	Net ER Revenue, 10 Year Crediting	Net Carbon Revenue as % of System Cost*
1,000 PV Home Lighting Systems	$500,000	-$22,300	$2,000	0.4%
2 MW Wind Farms	$2,500,000	$29,000	$515,000	21%
15 Micro-Hydro System	$412,500	-$475	$220,250	53%
1,000 Biogas Stoves	$300,000	$11,750	$342,500	114%

*Assumptions: $7.50/tCO2emission reduction price; undiscounted 10 yr crediting; carbon market participation costs of $25,000 over the project life. Actual market participation costs, emission reductions, and equipment costs could vary considerably.

Costs of the Voluntary Markets

- Voluntary Markets Average Prices (US$/tCO2e)



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 462 observations

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

VOLUNTARY CARBON MARKETS

Current Issues of the Voluntary Market

Current Issues of the Voluntary Markets

- Generally lower price
- Quality: certainty of additionality
- Transparency
- Number of standards: too confusing
- Market is still small – just 1% of the global carbon market

Consulting · Engineering · Implementation

Excellence in sustainable energy and climate change consulting

Contact us

London Office
Golden Cross House
8 Duncannon Street
London
WC2N 4JF

+44 (0) 203 397 0336
global@itpowergroup.com
www.itpowerglobal.com

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT: CAPACITY BUILDING AND TRAINING PROGRAMME

CARBON MARKETS

www.itpowergroup.com

CARILEC

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

FACTS AND FIGURES OF THE VOLUNTARY CARBON MARKET

Facts and Figures of the Voluntary Carbon Market

- Global Carbon Market
  - Voluntary carbon Market contributed a small percentage to the global carbon market: 0.02% of volume; <0.01% of value

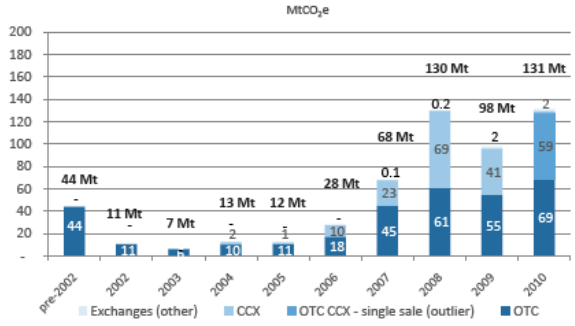
	Volume ($MtCO_2e$)		Value (US$ million)	
Markets	**2009**	**2010**	**2009**	**2010**
Voluntary OTC	55	128	354	414
CCX	41	2	50	0.2
Other Exchanges	2	2	12	10
Total Voluntary Markets	**98**	**131**	**415**	**424**
EU ETS	5,510	5,529	105,746	106,024
Primary CDM	135	94	2,858	1,325
Secondary CDM	889	1,005	15,719	15,904
Kyoto [AAU]	135	19	1,429	265
RGGI	768	45	1,890	436
Total Regulated Markets	**7,437**	**6,692**	**127,642**	**123,954**
Total Global Markets	**7,535**	**6,823**	**128,057**	**124,378**

Source: State of the Voluntary Market 2011

Facts and Figures of the Voluntary Carbon Market

Historic Volume (MtCO2) in the Voluntary Carbon Market

- the voluntary carbon markets followed financial markets out of a global recession to transact 131.2 MtCO2e -34% higher than 2009
- The OTC transacted 127.9 MtCO2e - 97% of global market share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 153 survey respondents. Annual totals may not equal sum of categories due to rounding.

Facts and Figures of the Voluntary Carbon Market

Volume of Transactions

- value of the voluntary carbon markets to be at **least $424 million in 2010** - remained stable compared to 2009

	2009			2010		
Market	Volume ($MtCO_2e$)	Avg. Price (US$)	Value (US$ million)	Volume ($MtCO_2e$)	Avg. Price (US$)	Value (US$ million)
Voluntary market total	98		415	131		424
Of which OTC	55	6.5	354	128	6	414
Of which CCX	41	1.2	50	2	0.1	0.2
Of which other exchanges	2	6.2	12	2	6	10

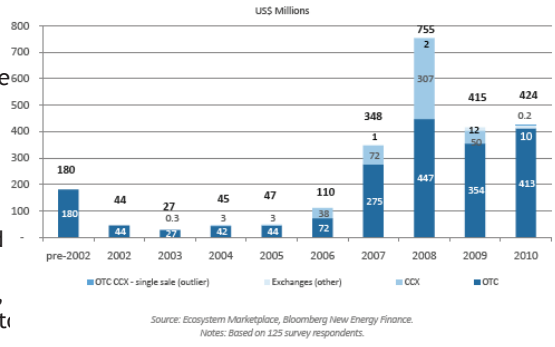
Voluntary Carbon Markets Volumes and Value Overview, 2010

Source: State of the Voluntary Market 2011

Facts and Figures of the Voluntary Carbon Market

Historic Value (US$ Millions) in the Voluntary Carbon Market

- volume-weighted average price of credits transacted in the voluntary OTC marke fell slightly to $6/tCO2e, down from $6.5/tCO2e in 2009
- a handful of large low-priced trades were among the factors that influenced the global average price, which ranged dramatically, from a low of $0.1/tCO2e t a high of $136.3/tCO2e

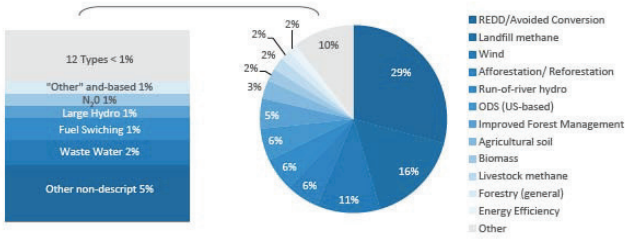


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 125 survey respondents.

Facts and Figures of the Voluntary Carbon Market

Transaction Volume by Project Type, OTC 2010

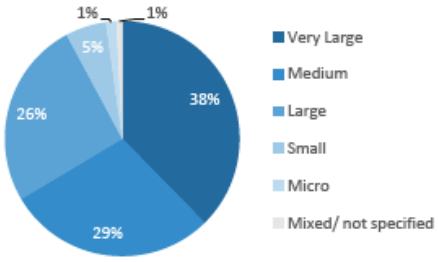
- land-based projects supplied the largest volume (28 MtCO2e) of credits transacted in the OTC market
- conservation efforts and international politics directed attention to projects that reduce emissions from deforestation and forest degradation (REDD) - REDD projects alone generated 29% of credits transacted in the voluntary market



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Facts and Figures of the Voluntary Carbon Market

Transaction Volume by Project Size, OTC 2010



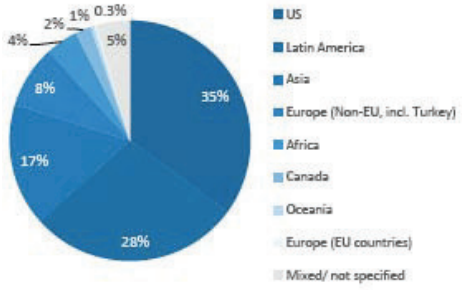
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 313 observations.

- Micro (less than 5,000 tCO2e/year)
- Small (5,000 to 19,999 tCO2e/year)
- Medium (20,000 to 99,999 tCO2e/year)
- Large (100,000 to 500,000 tCO2e/year)
- Very large (greater than 500,000 tCO2e/year)

Facts and Figures of the Voluntary Carbon Market

Transactions Volume by Project Location, OTC 2010

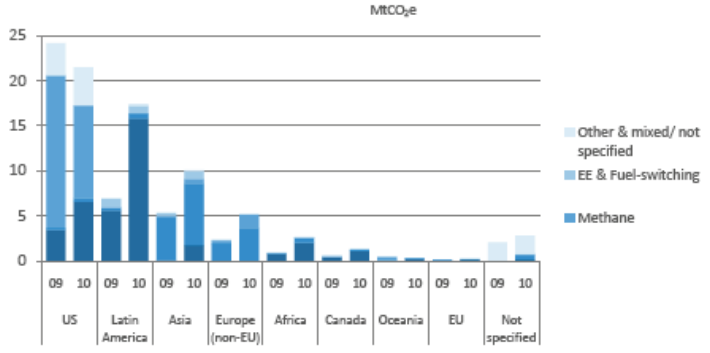
- OTC market added six new countries to its roster of project locations, extending voluntary carbon finance to a total of 45 countries;
- North America maintained its top spot among project locations to originate 35% of transacted OTC volume – 94% of which was generated in the US;
- In Latin America, transaction volumes more than doubled from the rich forest reserves of countries like Brazil and Peru



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Facts and Figures of the Voluntary Carbon Market

Transactions Volume by Project Location, OTC 2010

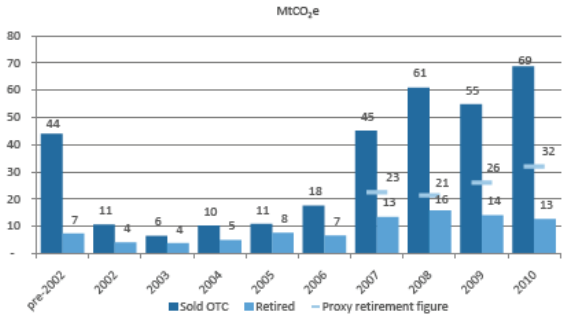


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 601 observations.

Facts and Figures of the Voluntary Carbon Market

Historic Transacted and Retired Volumes, OTC Market

- A carbon credit in the voluntary market does not fulfill its life's goal of offsetting another GHG emission until it is "**retired**" by a supplier or final buyer.
- Retirement is critical - it illustrates the degree to which the market has fulfilled its ultimate environmental purpose
- Suppliers or their voluntary buyers retired 12.7 MtCO2e – 1 MtCO2e more than was reported in our 2009 survey

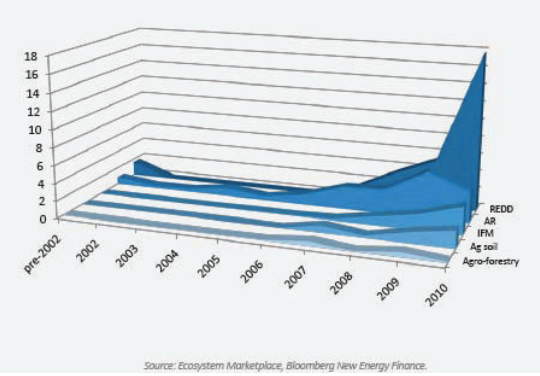


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 153 survey respondents.

Facts and Figures of the Voluntary Carbon Market

Historic Transaction Volumes, Forestry and Other Land Use types

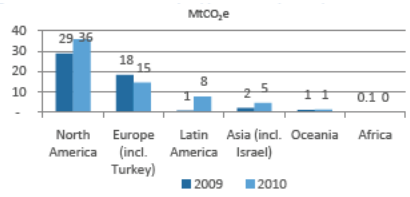
- Land-based projects supplied almost half (45%) of transacted credits that reported a project type,



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Facts and Figures of the Voluntary Carbon Market

Transaction Volume by supplier Country Headquarters, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 147 survey respondents.

- Companies headquartered in the US supplied the majority of credits transacted in 2010
- EU based suppliers transacted another large portion of the OTC volumes – sourced internationally due to the presence of the EU-wide mandatory scheme
- Suppliers headquartered in Asia and Latin America saw the most significant growth in 2010 – in number and in transacted volumes

Consulting · Engineering · Implementation

Excellence in sustainable energy and climate change consulting

Contact us

London Office
Golden Cross House
8 Duncannon Street
London
WC2N 4JF

+44 (0) 203 397 0336
global@itpowergroup.com
www.itpowerglobal.com

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT: CAPACITY BUILDING AND TRAINING PROGRAMME

CARBON MARKETS

www.itpowergroup.com

CARILEC

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Scope

- Main drivers for Voluntary Markets in the Caribbean
- Why VERs from the Caribbean region?
- Project Types Generating Credits for the Voluntary Carbon Markets
- Opportunities in the Caribbean Region
- Developing a Voluntary Carbon Market Project
- Case Studies of Voluntary Carbon Market Projects

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Main Drivers for Voluntary Markets in the Caribbens

Main Drivers for Voluntary Carbon Market in the Caribbean's

- Diversity of technologies
  - the technologies covered in the compliance market are also covered in the voluntary market
  - + more technologies: certain forestry, land use and transport technologies
- No geographical limitation: VERs can be generated form projects globally
- Voluntary market has evolved a simplified process based on the CDM project cycle but with:
  - lower-cost,
  - less rigorous standards (depends on the standard adopted); and
  - applied to a wide variety of project type

Main Drivers for Voluntary Carbon Market in the Caribbean's

3 sources of VERs at the moment:

1) CDM projects which have already been operational for a period of time, but due to (e.g. political uncertainty, changes in CDM-level or host-country regulations) have not been yet registered with the EB
2) Special situations: technologies or methodologies for emission reductions which have not yet been approved in the compliance regime (e.g. land use change and forestry, carbon capture storage, transport)
3) Variety of small-scale, community-driven projects which simply have insufficient resources to satisfy the strict requirements and specialized consultancy services required for the CDM project cycle – these projects thus opt for lower cost option of VERs

Main Drivers for Voluntary Carbon Market in the Caribbean's

- In the Latin America and the Caribbean's Voluntary Market projects came mostly from CDM projects that were not successfully registered

The nature of the Caribbean region, which enable specially the development of small scale projects, associated with the less stringent procedures of the Voluntary Market and the lower costs associated with them can lead to an increase of the number of projects producing VERs.

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Why VERs from the Caribbean Region?

Why VERs from the Caribbean Region?

- Niche market with desirable project characteristics:
  - Location – small and vulnerable Caribbean Islands
  - Type – solar and other renewables, small-scale energy efficiency
  - Strong environmental and social contributions – community projects
  - High profile – good for buyers image

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Project Types Generating Credits for the Voluntary Carbon Markets

Opportunities in the Caribbean Region

Project Group: Fossil Fuel

Project Type	Description	Co-benefits	Points to consider
Energy Efficiency	Fossil fuel use is decreased by using it more efficiently	Cost savings Supports clean technology and reduces fossil fuel dependency and co-pollutants such as Sox, PM and VOCs	If savings are greater than costs - the need for carbon finance should be consider
Off-grid renewable energy, grid renewable energy and fuel switching	Fuel switching projects utilize fuels (such as renewable energy sources) that provide energy with fewer emissions	Reduction of other pollutants and reduced dependency on fossil fuels	Support clean technology

Opportunities in the Caribbean Region

Project Group: Bio-carbon Sequestration

Project Type	Description	Co-benefits	Points to consider
Reforestation / afforestation of native tree species	Carbon is sequestered in tree biomass and soil	Range of potential social and environmental benefits, such as biodiversity conservation, water filtration, erosion protection, etc	Easy to communicate and tangible land restored. Measuring and monitoring relatively complex. Permanence and leakage risks
Reforestation / afforestation monoculture forestry	Carbon is sequestered in tree biomass and soil	Range of potential social and environmental benefits, such as biodiversity conservation, water filtration, erosion protection, etc	Easy to communicate and tangible land restored. Measuring and monitoring relatively complex. Permanence and leakage risks. Potential concerns around environmental and social trade-offs. Potentially an extra income stream for sustainable timber harvesting

Opportunities in the Caribbean Region

Project Group: Bio-carbon Sequestration (Cont.)

Project Type	Description	Co-benefits	Points to consider
Avoided deforestation of native tree species	Conserving or changing forest management practices maintains carbon sequestration and avoids emissions released to the atmosphere	Range of potential social and environmental benefits, such as biodiversity conservation, water filtration, erosion protection, etc	Easy to communicate and tangible land restored. Measuring and monitoring relatively complex. Permanence and leakage risks. Not currently obtaining carbon finance under the Kyoto markets.
Soil sequestration	Carbon sequestered in soil is increased by farming practices such as no-till	Numerous potential environmental benefits, such as reduced soil erosion and water pollution	No-till often linked with GMO crops. Significant permanence and financial additionality questions

Opportunities in the Caribbean Region

Project Group: Biogas

Project Type	Description	Co-benefits	Points to consider
Methane capture and destruction from landfills	Decomposing waste is covered by anaerobic digesters that cap and flare methane which can also be used as a fuel source	Somewhat reduced odors and risk of groundwater contamination. The methane can be used to produce electricity that can be used on-site or/ and supplied to the grid	Projects are easy to monitor and measure.
Methane capture and destruction	Animal waste is covered by anaerobic digesters that cap and flare methane which can also be used as a fuel source	Reduced odors and risk of groundwater contamination. The methane can be used to produce electricity that can be used on-site or/ and supplied to the grid	Projects are easy to monitor and measure.

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Opportunities in the Caribbean Region

Opportunities in the Caribbean Region

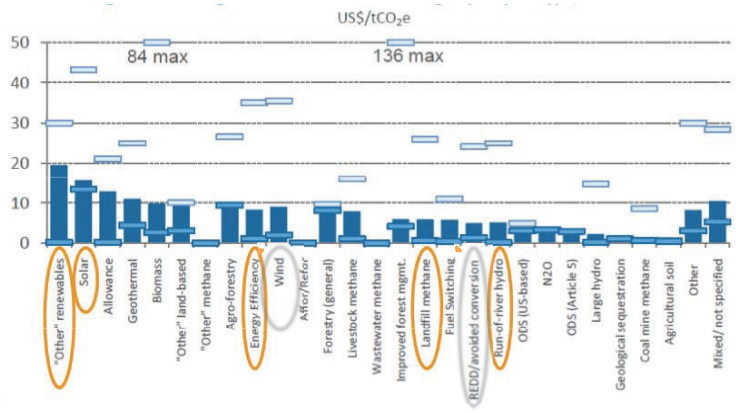
- Renewables + good project characteristics
- Solar, mini-hydro, biomass
- REDD forestry + forest management + new mangrove conservation methodologues
- Landfill and waste water
- Energy efficiency e.g. Home improvements

Opportunities in the Caribbean Region

- Renewables + good project characteristics
- Solar, mini-hydro, biomass
- REDD forestry + forest management + new mangrove conservation methodologues
- Landfill and waste water
- Energy efficiency e.g. Home improvements

Opportunities in the Caribbean Region

Average credit Price and price range by Project Type

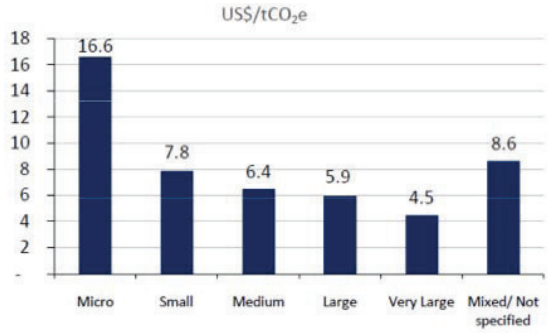


Opportunities in the Caribbean Region

- Solar Projects – high prices
  - Solar high price may be attributed to:
    - Solar offset scarcity,
    - Micro-scale project sizes
    - Higher production costs
  - Higher prices regardless of location or standard utilized
  - Solar = overall environmental appeal and/or level of buyer comfort with the familiar project type
- Run-off-river hydro – high prices
  - Due to micro-scale project sizes and
  - Run-off-river: overall environmental appeal and/or level of buyer comfort with the familiar project type

Opportunities in the Caribbean Region

- Solar Sizes- small is beautiful
  - Solar Micro (< 5,000 tCO2e/year)
  - Small (5,000 to 19,999 tCO2e/ year)
  - Medium (20,000 to 99,999 tCO2e/ year)
  - Large (100,000 to 500,000 tCO2e/ year)



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 215 observations.

Opportunities in the Caribbean Region

Gold Standard Micro-Project Scheme

- Community-Focused Micro Scale Scheme
- Other standards also developing guidelines that allow project developers to easily aggregate small or diffuse project activities
- High prices possible for Gold Standard certified projects

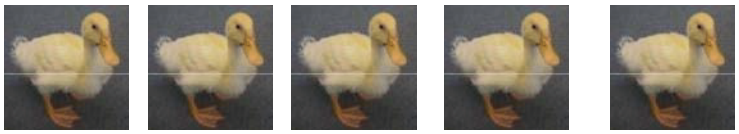
Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Developing a Voluntary Carbon Market Project

Developing a Voluntary Carbon Market Project

- Is a lot like developing any community / energy / forestry/ etc project
- You have to



- Line your dicks up….

Developing a Voluntary Carbon Market Project

1. You have an idea for a project which reduces or avoids carbon emissions
2. The project requires some extra financing or needs some assistance to secure finance
3. It should contribute to the sustainable development of the local community
4. Get your partners together
5. Write a Project Idea Note
6. Decide on a Standard to use
7. Present project to credit buyers
8. Get funding for your PDD/Protocol

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

HOW CAN PROJECTS IN THE CARIBBEAN'S BENEFIT FROM VOLUNTARY MARKET SCHEMES

Case Studies of Voluntary Carbon Market Projects

Case Studies of Voluntary Carbon Market Projects

SMALL SCALE WIND PROJECT IN ECUADOR

Small Scale Wind Project in Ecuador

Description:

- Title: San Cristobal Wind Power Project
- Location: Olancho, Ecuador
- Technology: 2.4 MW wind farm near Puerto Baquerizo Moreno on San Cristobal Island one of the Galapagos Islands in Ecuador
- Objective: generate electricity through sustainable means using wind
- Capacity Installed: 2.4 MW
- ER: Cristobal Wind Project is expected to produce 3,316,759 kWh the first year of operation

Small Scale Wind Project in Ecuador

Documents:

- VCS Project Document Description follows the "Further Guidance for Projects that are Registered in Two GHG Programs" as provided on the VCS website
- This project has been registered as CDM since 13 may 2008 and seeked registration under VCS for pre-CDM emission reductions
- The approved CDM baseline methodology AMS.I.D was used for the estimation of the combined margin baseline emission factor

Registry and Estimated Annual VCUs:

- Registry: Caisse des Depots
- Estimated Annual VCUs: 2,850;
- As of 07/03/2012, only 970 VCUs have been issued for this project

Case Studies of Voluntary Carbon Market Projects

HONDURAS HYDROPOWER PROJECT

Honduras Hydropower Project

Description:

- Title: Babilonia Hydroelectric Project
- Location: Olancho, Honduras
- Technology: run-of river hydroelectric project
- Objective: generate electricity through susta means using hydropower resources, selling the generated output to the state owned, National Electric Energy Company. It will contribute to climate change mitigation efforts and to sustainable development goals of Honduras
- Capacity Installed: 4 MW – consisting of 2 Pelton Turbines of 2 MW
- ER: 189,300tCO2e over 10 years period

Honduras Hydropower Project

Documents:

- A SSC PDD format document was followed and submitted to VCS verification
- The approved SSC-CDM baseline and monitoring methodology AMS.I.D "Grid Connected Renewable Energy Generation" was followed
- The approved CDM baseline methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources was used for the estimation of the combined margin baseline emission factor

Verification of ERs:

- Implementation of the project (02/04/2004 to 01/11/2007) the project has resulted in 75,187tCO2e during period, at 0:00.

Case Studies of Voluntary Carbon Market Projects

IMPROVED HOUSEHOLD CHARCOAL STOVES IN MALI

This example was adapted from a presentation carried out by Srikanth Subbarao at the 3rd CDM capacity Building Workshop in the Pacific

Improved Household Charcoal Stoves in Mali

Description:

- Title: Improved Household Charcoal Stoves in Mali
- Location: Mali
- Standard: Voluntary Gold Standard – Registry ID: GS 414
- Methodology: Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes Version 1
- Project Type: VER

Improved Household Charcoal Stoves in Mali

Why develop this type of project?

- Over-dependence by most of the population on charcoal and fuel wood as energy sources has heightened the threat of deforestation and desertification in many parts of Mali.
- Fuel wood and charcoal (together referred to as wood fuel) meet between 80% and 90% of Mali's fuel requirements.
- Before the project, inefficient and polluting cooking regimes were deeply established throughout West Africa and in Mali in particular.
- The project aims to reduce GHG emissions by dissemination of fuel-efficient charcoal stoves, thereby reducing charcoal and non renewable biomass consumption.
- Stoves reduces fuel consumption by introduction of a ceramic liner that increases combustion efficiency and retains heat.

Improved Household Charcoal Stoves in Mali

Aims of the project developed

- Before this VER project, the stove manufacturer (Katene), sold stoves (SEWA stoves) with the help of various subsidies and aid organizations.
- The project developer aimed at utilizing carbon finance to sell the stoves at affordable prices to poor customers.
- It would also help transit towards a more professional commercial relationship between the user and the disseminators.
- The project aims to disseminate more than 300,000 stoves in 10 years

Improved Household Charcoal Stoves in Mali

Benefits of the Project

- Mothers and children will be exposed to fewer hazardous air pollutants through reduced emissions of carbon monoxide and fine particulate matter.
- Improved livelihood - On average, a household using a medium sized stove saves about US$25 per year for an initial investment of $5.33.
- Improvement in biodiversity due to reduced pressure on remaining forest reserves
- Increased employment opportunities in stove manufacturing, distributing, retailing and maintenance.
- Technology self reliance by introduction of a locally manufactured stove technology
- Greater access to energy for householders

Improved Household Charcoal Stoves in Mali

Project Timeline

~ 2 years until project registration under the GS

Activity	Date
Letter of Agreement between Katene (stove manufacturer) and E+Carbon	27/11/2007
ERPA signing between Katene and E+ Carbon	03/12/2007
Local Stakeholder Consultation	27/06/2008
First PDD version	23/09/2008
Validation start	30/09/2008
Validation complete	24/08/2009
GS Project Registration	09/09/2009
Dissemination of Stoves	01/12/2009

Improved Household Charcoal Stoves in Mali

Project Additionality

- Evidence gathered confirmed that at unsubsidized prices Katene stoves were unaffordable to the majority of Malians.
- There is a lack of awareness among potential users regarding the benefits (health & environment) associated with SEWA stove use.
- The addition of carbon finance makes the efficient charcoal stoves cheap enough for lower income households in Mali to afford them.
- The medium stoves priced at 2,500 CFA francs (5.33 USD) as opposed to the original retail price of 3,500 CFA (7.47 USD). This is a significant reduction when compared to the household incomes
- Carbon finance also helps cover the funding cost for raising awareness and promotional activities in new regions.
- To realize the project, E+Carbon provided funds to Katene to keep the stoves affordable while carbon revenues are realized.

Improved Household Charcoal Stoves in Mali

Sustainable Development Assessment and Monitoring

Sustainable Development Matrix		Score (-2 to 2)
Local/Regional/global environment		
	Water quality and quantity	0
	Air quality*	2
	Other pollutants*	0
	Soil condition	0
	Biodiversity	1
Sub-total		3
Social sustainability and development		
	Employment quality*	1
	Livelihood of the poor*	2
	Access to energy services*	1
	Human and institutional capacity	1
Sub-total		5
Economic and technological development		
	Employment (numbers)*	1
	Balance of Payments (sustainability)	0
	Technological self-reliance	1
Sub-total		2
TOTAL		10

The sustainability analysis assesses the project in terms of environmental and sustainable development impact. **This is one of the key aspects of a Gold Standard project**

- The scoring is done depending on the impact of the project – greatest positive (+2), additional positive (+1), no impact (0) and negative impacts (-1 and -2)

Improved Household Charcoal Stoves in Mali

Sustainable Development Assessment and Monitoring

Example : Livelihood of the poor

- PDD claims

Livelihood circumstances will be improved since the improved stoves reduce fuel costs. On average, a household using a medium sized stove saves about US$25 per year for an initial investment of $5.33. The SEWA stove contributes to reduction in energy budgets on charcoal by about 25%

- Monitoring Indicator

Cost savings will be self reported by end users as well as calculated based on quantitative fuel savings and average local fuel prices at that time

Improved Household Charcoal Stoves in Mali

Sustainable Development Assessment and Monitoring

Example : As reported during the Monitoring Report 1

Sustainable Development Variables (Gold Standard Requirement)

Sustainable Development Indicator	Data type	Data variable	Data unit	Value
Air Quality	Self-reported IAP reduction, and/or ambient CO & PM concentrations	Reduced indoor air pollution (IAP)	Ambient IAP concentration	"Reduced smoke", "reduced eye irritation and coughing were reported by users" as one of the reasons they use a Sewa stove
Livelihood of the Poor	Survey results	Household fuel cost savings	$ saved/year	59,860 CFA/year
Employment	New employment	Job creation	Jobs/Year	No new job created since project start date. Current number of employees is 16
Employment quality	Periodic assessment of conditions	Employment quality	Qualitative assessment	Katene provides wages and benefits that exceed Malian labor law requirements

Improved Household Charcoal Stoves in Mali

Emission Reduction

Emission reduction claimed for reduced usage of non renewable woody biomass and non biomass fuel in a project cluster from the use of the improved cooking device.

*Total: **691,651 tCO2e** in 10 years crediting period*

Year	Estimation of project activity emissions (tons CO_2e)	Estimation of baseline emissions (tons CO2e)	Estimation of leakage (tonnes CO_2e)	Estimation of emission reductions (tons CO_2e)
2008	28,254	37,579	0	9,325
2009	82,778	110,100	0	27,321
2010	132,401	176,100	0	43,699
2011	175,163	232,976	0	57,813
2012	210,998	280,639	0	69,641
2013	238,847	317,680	0	78,833
2014	264,193	351,390	0	87,198
2015	290,612	386,529	0	95,918
2016	320,593	426,405	0	105,813
2017	351,732	467,823	0	116,091
Total	2,095,570	2,787,221	0	691,651

Improved Household Charcoal Stoves in Mali

Monitoring Parameters

- Maintenance of total sales record of the stove.
- Maintenance of detailed customer record (including date of sale, cooking stove model, etc).
- Usage Survey for sales made in the first year of the project, to establish the fraction of end-users no longer using the stove purchased.
- Wider social and economic impact as outlined in the Gold Standard sustainable development assessment

Project Monitoring

- Monitoring Period: November 27, 2007 – September 8, 2009.
- Project Activity disseminated: 34,817 stoves during the monitoring period.
- Emission reductions: **42,284 tCO2e**

Improved Household Charcoal Stoves in Mali

Project Impact - Gold Standard Sustainability Indicators

Sustainable Development Indicator	Data type	Data variable	Data unit	Value	Source
Air Quality	Self-reported IAP reduction, and/or ambient CO & PM concentrations	Reduced indoor air pollution (IAP)	Ambient IAP concentration	"Reduced smoke", "reduced eye irritation and coughing were reported by users" as one of the reasons they use a Sewa stove	Berkeley Air's 2008 Baseline Kitchen Survey (raw data) Conducted March-April 2008
Livelihood of the Poor	Survey results	Household fuel cost savings	$ saved/year	59,860 CFA/year	Berkeley Air's 2008 Annual Carbon Monitoring Report: Sewa improved charcoal stoves, Katene Kadji, Mali Issued May 12, 2009
Employment	New employment	Job creation	Jobs/Year	No new job created since project start date. Current number of employees is 16	E+Co Monitoring and Evaluation Baseline Report January 3, 2008
Employment quality	Periodic assessment of conditions	Employment quality	Qualitative assessment	Katene provides wages and benefits that exceed Malian labor law requirements	Interview with entrepreneur
Access to energy services	Extrapolated based on total sales and average household size	Improved energy access	People/year	222,572people/year	Berkeley Air reporting Sales records from 12/1/07-9/8/09
Other Pollutants	Periodic assessment of conditions	Proper disposal	Qualitative assessment	Scrap metal is sold to peddlers who resell them to smelting companies. Empty paint cans are collected in bags to avoid excess release of fumes	Site visit by project proponent

Consulting · Engineering · Implementation

Excellence in sustainable energy and climate change consulting

Contact us

London Office
Golden Cross House
8 Duncannon Street
London
WC2N 4JF

+44 (0) 203 397 0336
global@itpowergroup.com
www.itpowerglobal.com

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT: CAPACITY BUILDING AND TRAINING PROGRAMME

CARBON MARKETS

www.itpowergroup.com

CARILEC

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

FUTURE OF THE VOLUNTARY CARBON MARKET AND IMPACTS FOR THE REGION

Scope

- Continuity of the Carbon Market Post-2012
- Future of the Voluntary Carbon Market

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

FUTURE OF THE VOLUNTARY CARBON MARKET AND IMPACTS FOR THE REGION

Continuity of the Carbon Market Post 2012

Continuity of the Carbon Market Post 2012

Positive Manifestations

- Manifestation of the EU ETS to continue through 2020 and accept CERs – assurances the continuity of CDM
- The future regulation in the USA for the offsets with its legislative proposals could result in increase of demand for biggers reductions than Kyoto
- Introduction of new carbon market mechanism such as NAMAS and new lines for climate change financing
- Mexico enters the system of "cap and trade" energy generating industries to internalize the cost of CO2 production
- Technological development and competitiveness

Continuity of the Carbon Market Post 2012

Positive Manifestations

- Latin America will begin to internalise the cost of emitting CO2 emissions in the energy and products
- The entering into for of the CCX programme etc...

This show that the Carbon Market does not end in 2012

It may even increase!!!!!

Presenting opportunities for the development of cap and trade and off-set projects!!

Teaching Segment 2: Other Carbon Market Schemes for Developing Countries and Its Applicability within the Region

FUTURE OF THE VOLUNTARY CARBON MARKET AND IMPACTS FOR THE REGION

Future of the Voluntary Carbon Market

Future of the Voluntary Carbon Market and Impacts for the Region

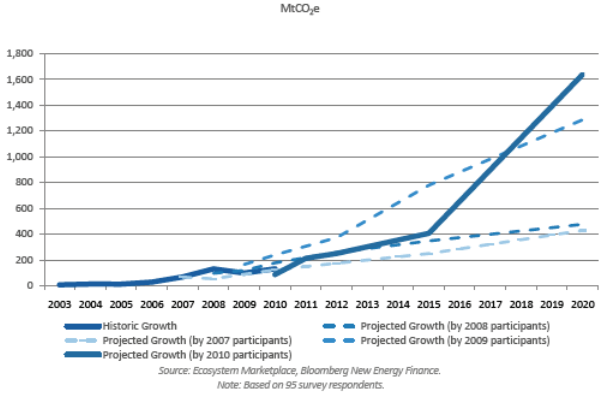
- Beyond 2012 the outlook for the carbon market is complex and depends on the likely commitment of major emitters and the mechanisms adopted at the domestic and international levels to achieve these commitments
- the main constraint to the carbon market is the lack of demand beyond current initiatives - missed opportunity for developed and developing countries to benefit from market instruments to mobilize resources and engage private sector in climate action
- Market mechanisms can contribute to lower the cost of achieving sustainable goals, result in additional resources, and send a price signal to encourage less carbon-intensive lifestyles and investment decisions

Future of the Voluntary Carbon Market and Impacts for the Region

- The volume of the voluntary carbon markets from 2010 until 2020 is expected to growth.
- According to the State of Voluntary Carbon Markets 2011 suppliers forecasted:
  - substantial growth for 2011, expecting that they and their peers will transact 213 MtCO2e over the next year - 82 MtCO2e more than in 2010.
  - predicted market size of 406 MtCO2e in 2015
  - Beyond 2015 – and especially after 2017: predictions surpassed past years' projections - 1,638 MtCO2e in 2020. This places the voluntary markets at 150% the size of the primary and secondary 2010 CDM market

Future of the Voluntary Carbon Market and Impacts for the Region

Supplier-Projected Growth in the Voluntary Carbon Markets



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 95 survey respondents.

Future of the Voluntary Carbon Market and Impacts for the Region

- Unsold portfolio 2010 and project pipeline through 2016

Project Type Category	Portfolio Unsold 2010 Volume ($MtCO_2e$) Pure Voluntary	Portfolio Unsold 2010 Volume ($MtCO_2e$) Pre-Compliance	Pipeline through Dec. 31, 2015 Volume ($MtCO_2e$) Pure Voluntary	Pipeline through Dec. 31, 2015 Volume ($MtCO_2e$) Pre-Compliance
Forestry and Land-Use	136.4	1.5	291.6	94.8
Renewable Energy	4.4	.2	40.1	1.2
Methane	2.9	.08	11.5	8.4
Efficiency and Fuel Switching	1.5	1.5	20.2	4.2
Industrial Gases	.6	.05	1.1	13.4
TOTAL	145.9	3.4	364.6	122.1

Source: Ecosystem Marketplace, Bloomberg New Energy Finance

Future of the Voluntary Carbon Market and Impacts for the Region

- As it could be seen, there is large potential for VCM projects developed in:
  - Forestry Sector
  - Renewable Energy
  - EE and fuel switching

Areas in which VCM can be developed in the Caribbean region

Future of the Voluntary Carbon Market and Impacts for the Region

- Third-party standards play a powerful role in shaping the voluntary carbon market, offering guidance to project developers in the mainstream and niche markets.
- The contribution of the Voluntary Markets to the Global Carbon Market although is expected to increase, it is not expected to surpass the compliance market

Contact us

London Office
Golden Cross House
8 Duncannon Street
London
WC2N 4JF

+44 (0) 203 397 0336
global@itpowergroup.com
www.itpowerglobal.com