



Carbon markets

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Outline

- What are carbon markets?
- Voluntary vs. regulatory
- International negotiations (summary)
- Current trends
- Ugandan involvement

What is the carbon market?

- The carbon market is like any other market, but in this particular market “people” are shopping for “carbon credits” measured in tCO₂e.
 - Emission Reduction Units (ERU)
 - Certified Emission reduction (CER)
 - Verified Emissions Reductions (VER)
 - Removal Units (RMU)



Source: Freefoto.com

Who are the shoppers?

- Compliance shopper, i.e. (big) carbon emitters from Europe
- Pre-compliance shoppers, i.e. (big) carbon emitters from the US
- Voluntary shoppers, e.g. corporations (CSR), individuals, (N)GOs



Who are the sellers?

- Developing countries, i.e. Lower emission countries or with large tracks of forests
 - China, India, Indonesia, Brazil
- Developed countries, i.e. countries trading off their surplus in carbon credits
 - A country like Sweden has reduced its emissions far below its 5.2% obligation



The compliance shopper

- from EU, under the Kyoto Protocol every ratifying country has to reduce its national emissions to 5,2% below their emissions back in 1990.

Top ten emitters:

1. China – 17%
 2. United States – 16%
 3. **European Union – 11%**
 4. Indonesia - 6%
 5. India – 5%
 6. Russia – 5%
 7. Brazil – 4%
 8. Japan– 3%
 9. Canada – 2%
 10. Mexico – 2%
- (MNP, 2007)

Example: *the Netherlands*

Emissions target: 200.1 MtCO₂e/y (-6%)

1990: 212.9 MtCO₂e/y

2004: 217.8 MtCO₂e/y (8.8%)

Problem: increase of 8.8%

Solution: purchase of 20MtCO₂e/y

End total: 197.8 MtCO₂e/y



The pre-compliance shopper

- from US, certain industries (mainly power companies) have to comply with newly emerging state emission requirements

Top ten emitters:

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(MNP, 2007)

Example: *California (AB 32)*

Emissions

Target by 2020: 427 MtCO₂e/y

Start of compliance: 1st January 2012



The voluntary shopper

- corporations, e.g. as part of Corporate Social Responsibility initiatives (being “green”), attract potential clients, satisfy eco-conscious shareholders, new investment opportunities, risk management or part of their philosophy
- institutions, e.g. a carbon neutral conference
- individuals, e.g. offset your holiday flight

Why is there a carbon market?

- The international community and human societies have acknowledged that climate change is human induced and action is needed:
 - Governments: issue rules and regulations to cap and reduce emissions → Regulatory market
 - Individuals and corporations: volunteer to offset their carbon footprint → Voluntary market

Why is there carbon market?

- Carbon markets allow parties time to adjust to new carbon caps
- Companies with lower costs or lower emissions can sell excess credits
- Companies where carbon reducing technology is expensive or requires more time can buy credits
- Carbon Caps –initial allowance followed by gradually increasing cap over time



Why is there carbon market?

- Regulations create regulatory markets:
 - Kyoto protocol (1997): commitment of Annex 1 countries (Europe, Canada, Australia, New Zealand)
 - USA Federal “protocol” (on hold): Waxman-Markey bill
 - North American regional initiatives:
 - Regional Greenhouse Gas Initiative (RGGI): USA-East Coast (2008)
 - Western Climate Initiative (WCI): States of Canada and USA (2007)
 - California Emission Trading Scheme: AB 32 (2012)



Legal Framework for Carbon Credit Markets

- Kyoto protocol (defined as flexible mechanisms):
 - International Emission Trading (IET)
 - Clean Development Mechanism (CDM)
 - Joint Implementation (JI)
- Voluntary protocols or standards:
 - Land Use, Land-Use Change and Forestry (LULUCF)



How are carbon credits created?

- Kyoto protocol (defined as flexible mechanisms):
 - International Emission Trading (IET):
 - Each country needs to reduce by at least 5.2%
 - E.g., Sweden and Portugal can sell
 - Finland and Estonia can buy

Country	Change 2005-2007
Sweden	-20.8%
Portugal	-14.4%
Luxembourg	-1.4%
Netherlands	-0.6%
Denmark	11.1%
Estonia	21.5%
Finland	28.5%



How are carbon credits created?

- Kyoto protocol (defined as flexible mechanisms):
 - Joint Implementation (JI)
 - Mainly between Annex 1 countries, i.e. between developed countries and countries with economies in transition
 - e.g. between the Netherlands and Poland

Example: a power plant in Poland is not very efficient and emits a lot of GHGs from coal at a rate of 200tCO₂e per year

the Netherlands by investing in new technology, the power plant has become more efficient and now only emits 100tCO₂e per year

Emission reduction: 100 tCO₂e=100 carbon credits



How are carbon credits created?

- Kyoto protocol (defined as flexible mechanisms):
 - Clean Development Mechanism (CDM)
 - Mainly between developed countries and developing countries
 - Technological: e.g. installing windmills, solar panels, hydro power dams, etc. to replace fossil fuel energy
 - Biological : e.g. afforestation/ reforestation, improved forest/ crop/ grass management, etc. to reduce emission of natural GHGs

Example from Uganda:

- 1) Bugoye run of river hydro power dam - building a power dam to replace fossil fueled generators
- 2) Nile Basin Reforestation project - planting forest to removes CO2 from the atmosphere



How are carbon credits created?

- Voluntary “protocols” or standards:
 - Land Use, Land-Use Change and Forestry (LULUCF)
 - Why: emissions from land-use change make up 18-21% of the global emissions, e.g. cutting and burning forest from fields
 - The LULUCF projects are attract to voluntary buyers particularly Reduced Emissions from Deforestation and Degradation (REDD) because:
 - Fighting climate change by reducing or removing emissions
 - Saving forests for conservation
 - Helping poor people through rural development



What are the carbon markets?

- Over-The-Counter (OTC) transactions (between two parties):
 - CDM/JI
 - LULUCF, e.g. REDD project
- Exchange transactions:
 - E.g. the Chicago Climate Exchange (CCX) – they have their own protocols and standards which generate “carbon financial instruments “ and can be traded like on other financial instrument like stock, loans or bonds.



Types of carbon transactions

Carbon contracts:

- Low risk: selling existing carbon credits
 - Compliance buyer
- Medium risk: forward sale of future carbon credits
 - Risk is with the seller e.g. pre-compliance buyer
- High risk: forward credit of pre-existing credits
 - Risk is with the buyer, e.g. a donor without the need to setoff carbon footprint immediately



International Negotiations

- 1992 Rio de Janeiro
 - the U.N. Framework Convention on Climate Change (UNFCCC) objective: stabilizing GHG concentrations in the atmosphere “at a level that would prevent dangerous anthropogenic interference with the climate system.” **at a voluntary basis** i.e. developed countries reducing their emissions to 1990 levels by 2000
- 1997 Kyoto
 - stronger action was needed, countries negotiated the 1997 the Kyoto Protocol, setting legally binding targets to reduce emissions by 5.2 % below 1990 levels by 2012.
- 2005
 - 8 years later in February the Protocol became legally binding



International negotiations

- 2009 Copenhagen
 - Countries negotiating successor to the Kyoto protocol
- 2012 end of Kyoto protocol
 - Period of the first commitment
- Post – Kyoto?
 - EU is committed and will continue to reduce its emissions
 - California will continue ahead with legislation
 - Other regional initiatives will probably continue
 - Voluntary market continues to be an option



Current trends

- Regulatory markets:
 - Dependent on international agreements which can take years to negotiate and ratify (e.g., Kyoto took 8 years)
 - Emissions Trading Schemes (ETS) continue business as usual (BAU)?
- Voluntary markets:
 - Pre-compliance segment dropped in volume last year (political uncertainty, esp. in the USA)
 - True voluntary segment is small but stable



Ugandan involvement

- REDD-plus:
 - Primary project developers are NGOs:
 - ECOTRUST (Plan Vivo – reforestation);
 - Ugandan Carbon Bureau
 - Jane Goodall Institute (JGI)
 - Chimpanzee Sanctuary and Wildlife Trust (CSWCT)
 - Albertine Rift Forestry Carbon Group (feasibility phase, pre-PDD)
(incl. WWF, WCS, ECOTRUST, NAHI, CSWCT)
 - Funding :
 - GEF
 - corporations



Ugandan involvement

(from BMU report 2010)

- CDM/JI:
 - Main partners:
 - German development Cooperation (GTZ-KfW);
 - the Royal Danish Embassy;
 - Belgian Development Agency (BTC);
 - the World Bank
 - Funding agencies:
 - the COMESA Carbon Fund;
 - Africa Carbon Asset Development Facility (ACAD);
 - KfW CarbonFund;
 - the African Carbon Support Project (ACSP);
 - World Bank carbon funds.



Ugandan involvement

- CDM/JI projects/activities:
 - Registered:
 - West Nile Electrification Project;
 - the Nile Basin Reforestation Project No 3
 - the Municipal Waste Compost Programme [PoA]
 - At validation stage (12):
 - Landfill project (source of menthane) (1);
 - Hydro power project (4);
 - Sugar bagass co-generation (2);
 - Aforestation (1) and reforestation (4);
 - Fuel efficient cook stoves [PoA].



Ugandan involvement

- Bottleneck for implementation:
 - In-country capacity:
 - Missing expertise, know-how and experience within the government
 - Financial obstacle:
 - lack of upfront finance to conduct feasibility studies
 - Carbon credits from afforestation and reforestation are not accepted EU-ETS (less liquid market)
 - Main partners are from Europe



Ugandan involvement

Potential CDM/JI Projects

Afforestation and reforestation

- 1 Rehabilitation of degraded lands (e.g. *Imperata* grasslands) to 1a forest 1b agroforestry ;
- 2 Reforestation of degraded temperate grasslands or arid lands by tree planting;
- 3 Establishing tree/shade crops over existing crops (e.g. coffee)
- 4 Plantations for wood products 4a Small scale landholder driven 4b Commercial scale
- 5 Landscape rehabilitation through planting corridors etc
- 6 Fuel wood plantings at a commercial scale

Forest Management

- 7 Improved forest management via fertilizer, in-plantings etc
- 8 Improved fire management
- 9 Reduced impact logging
- 10 Alternatives to fuel wood for forest/environmental protection

Cropland management

- 11 Reduced till agriculture
- 12 Other sustainable agriculture

Grazing land management

- 13 Revegetation of semi-arid and arid lands with shrubs or grasses
- 14 Improved livestock management leading to vegetation and soil recovery
- 15 Bio-fuels: Use of biological residue to produce energy

Other (any efficiency focused or energy saving project)



Future of Carbon Projects in Uganda

- Natural Resources:
 - E.g. forests, woodland, rivers
- Momentum:
 - E.g. submission of R-PP to accommodate REDD projects, Registration of CDM projects
- Need:
 - BAU scenario is not viable; there is a genuine risk that part of the Ugandan people will become “climate refugees”
- Opportunity:
 - Carbon and specially REDD projects can provide needed funding and opportunities to pursue sustainable rural development



- Thank you for your attention
- Question and remarks