

offsets 101

the market for emissions reductions

renewable energy markets conference
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outline

1. **intro to climate change**
2. what is an offset?
3. offset projects
4. the voluntary market
5. certification
6. RECs vs. offsets

The Greenhouse Effect

Some of the infrared radiation passes through the atmosphere but most is absorbed and re-emitted in all directions by greenhouse gas molecules and clouds. The effect of this is to warm the Earth's surface.

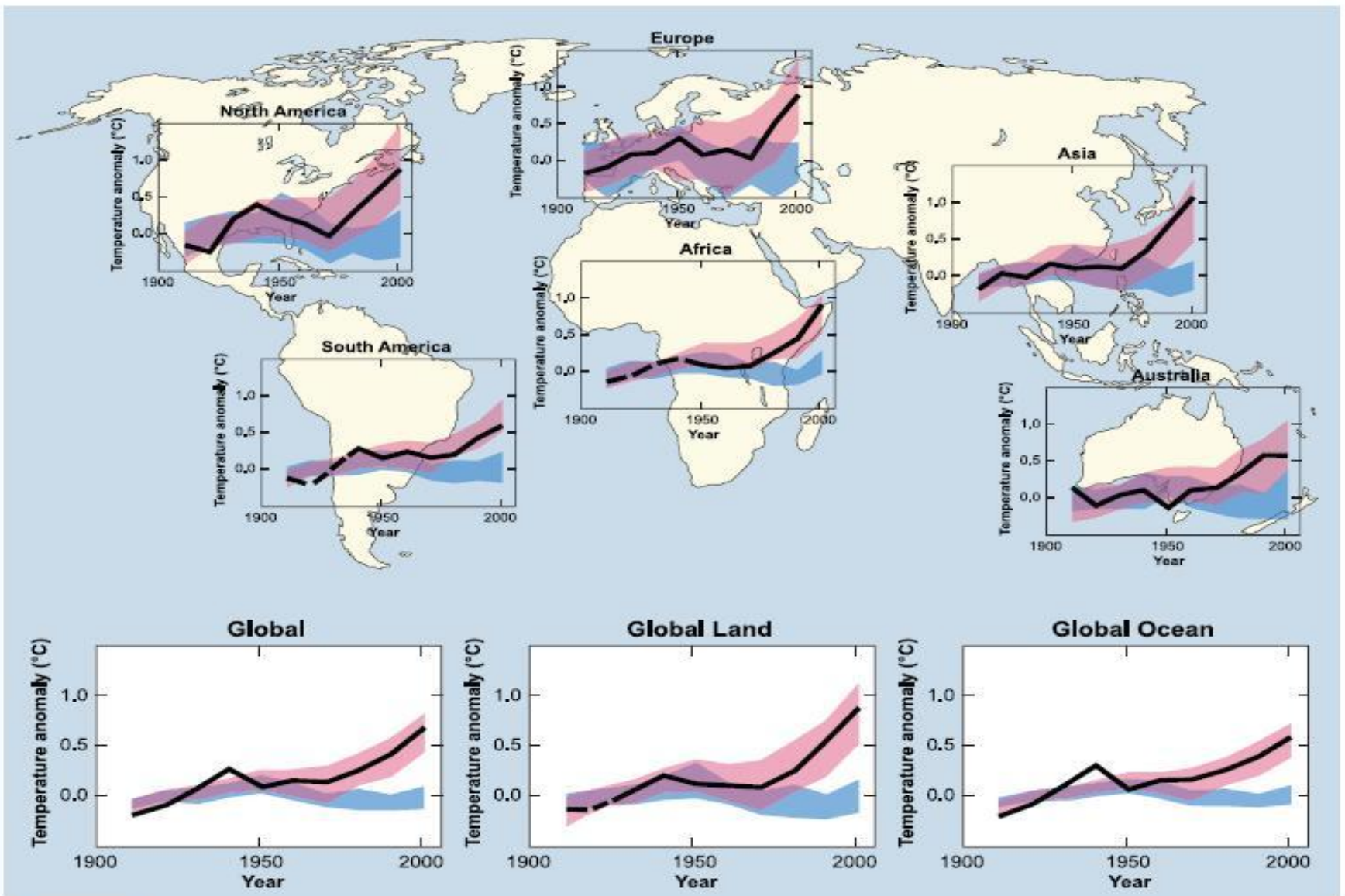
Solar radiation powers the climate system.



Some solar radiation is reflected by the Earth and the atmosphere.

Greenhouse Gas (GHG)	Chemical Symbol	Global Warming Potential (GWP)
Carbon Dioxide	CO ₂	1
Methane	CH ₄	21
Nitrous Oxide	N ₂ O	310
Hydrofluorocarbon	HFC	140 - 11,700
Perfluorocarbon	PFC	6,500-9,200
Sulfur Hexafluoride	SF ₆	23,900

surface.



models using only natural forcings
 models using both natural and anthropogenic forcings

— observations

©IPCC 2007: WG1-AR4

outline

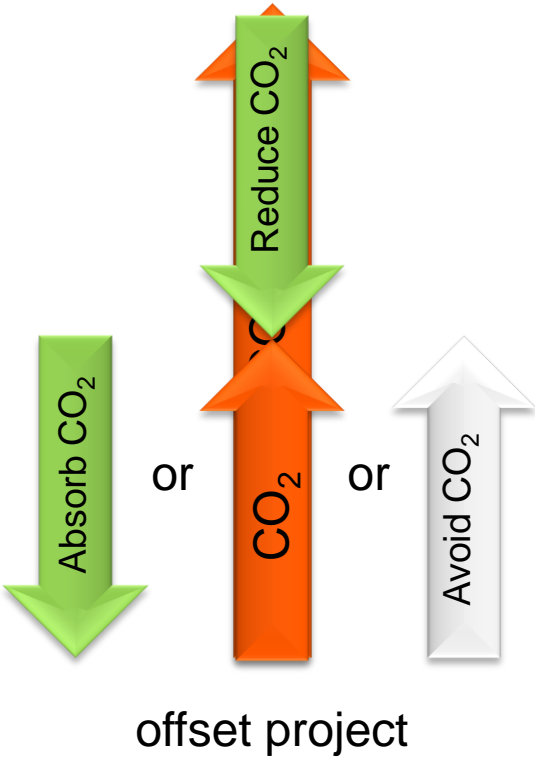
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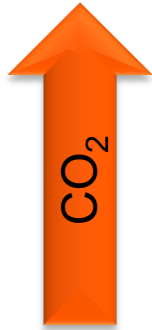
definition

A carbon offset represents a specific quantity of greenhouse gas (GHG) emission reductions (i.e. a ton of carbon dioxide absorbed or avoided) from a project-based activity, which is purchased in order to negate or diminish the impact of the recipient's GHG emissions.

When you purchase an offset, you alone have the right to all associated claims about the environmental benefits it embodies. An offset is to be regarded as real environmental commodity, not a donation or investment in a future project.

Atmosphere





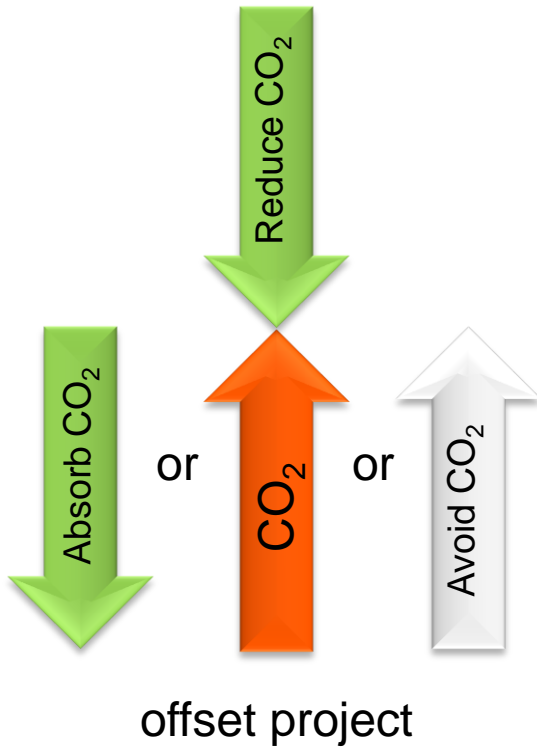
your GHG
emitting activity

Emissions Categories (Scopes)

- Scope 1 – direct greenhouse gas emissions from sources owned or controlled by the entity.
- Scope 2 – indirect, and associated with the generation of electricity, heating/cooling, or steam purchased for the entity’s own consumption.
- Scope 3 – other indirect emissions not covered in Scope 2, including employee business travel; transportation of products, materials, and waste; outsourced activities; and production of imported materials.

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renewable energy
energy efficiency
agriculture/forestry/land use
methane destruction
industrial gas destruction

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compliance markets

meeting mandatory
mitigation obligations with
offsets

the clean development mechanism (CDM)
– the international compliance market

- developed countries can help meet their kyoto targets by purchasing certified emission reductions (CERs)
- administered by the UNFCCC Secretariat, the CDM Executive Board
- 1,792 registered projects
- vast majority of projects in china, india, and brazil
- 2008 transactions: 389 million tonnes CO₂-e, worth \$6.5 billion

the voluntary market

global market for emission
reductions to meet voluntary
demand

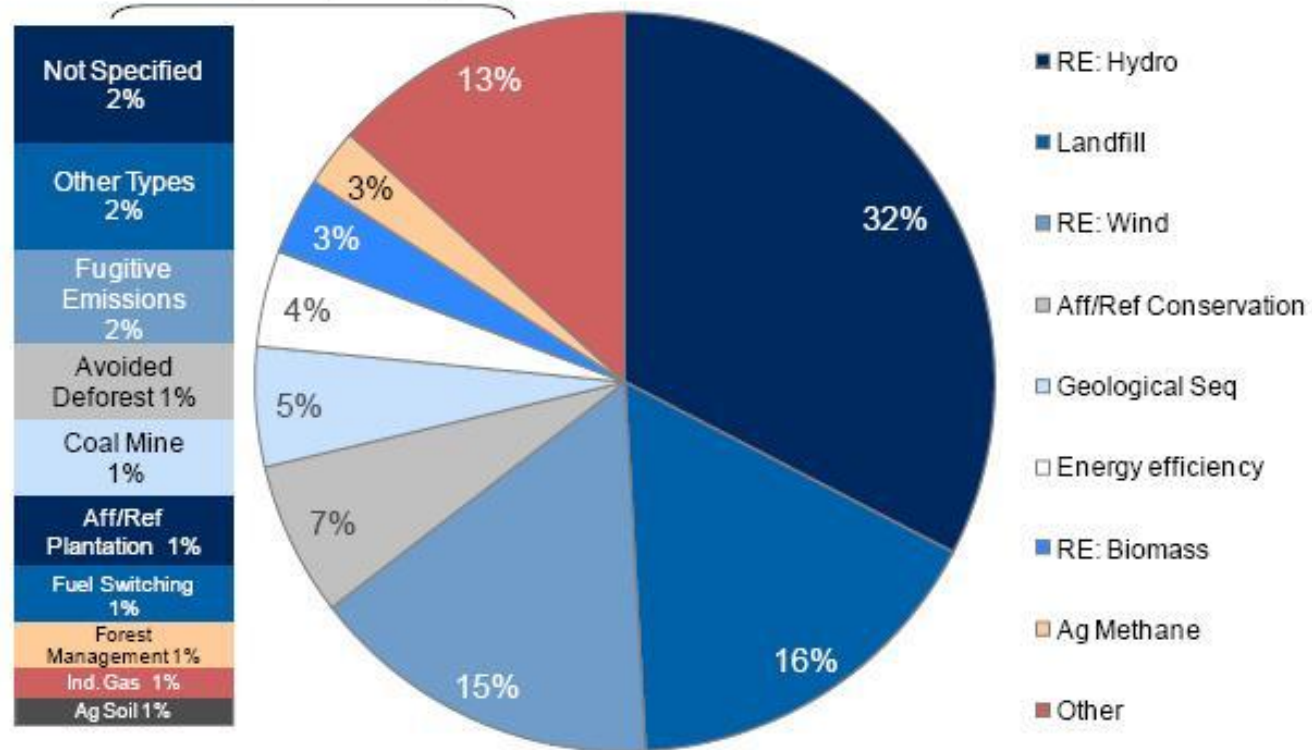
- different places where trading takes place – exchanges vs. over the counter (OTC)
- different commodity names

global market

- total value in 2008: \$705 million
- total volume in 2008: 123 million tonnes CO₂-e

voluntary market

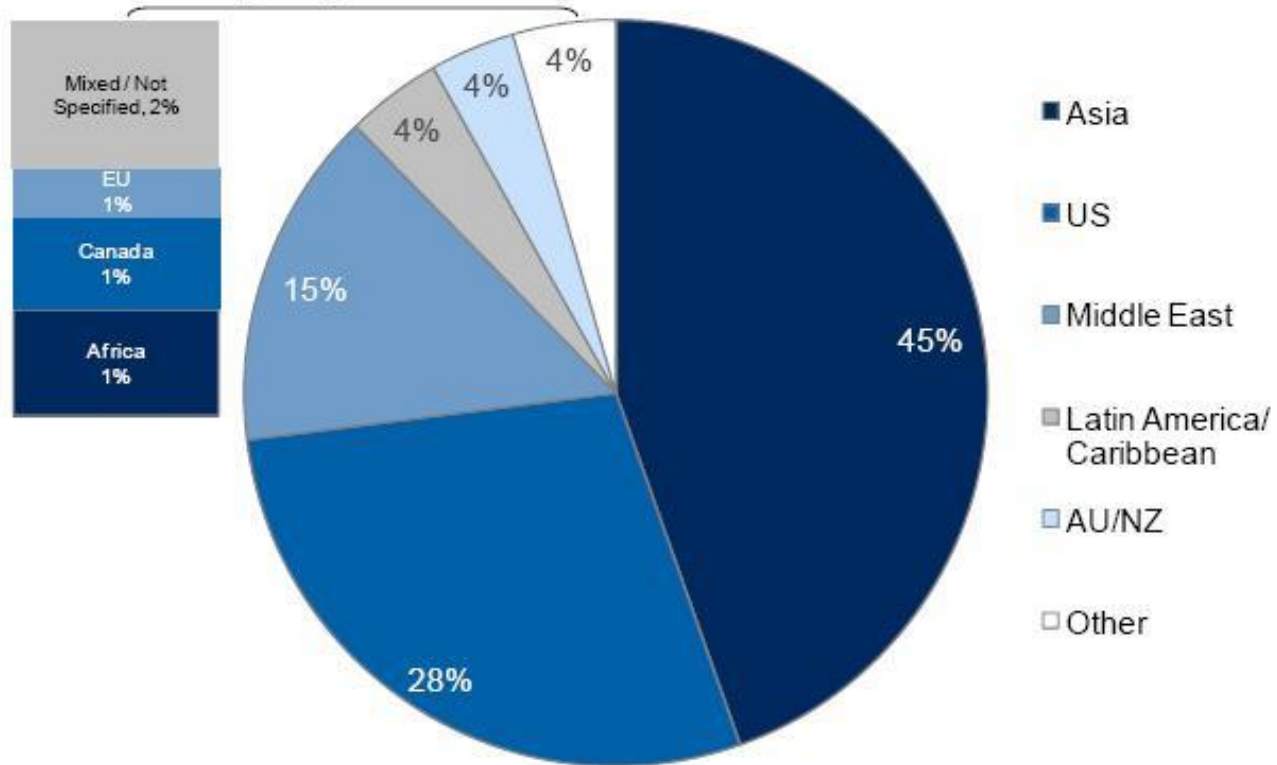
Transaction Volume by Project Type, OTC 2008



Source: Ecosystem Marketplace, New Carbon Finance.

voluntary market

Transaction Volume by Project Location, OTC 2008



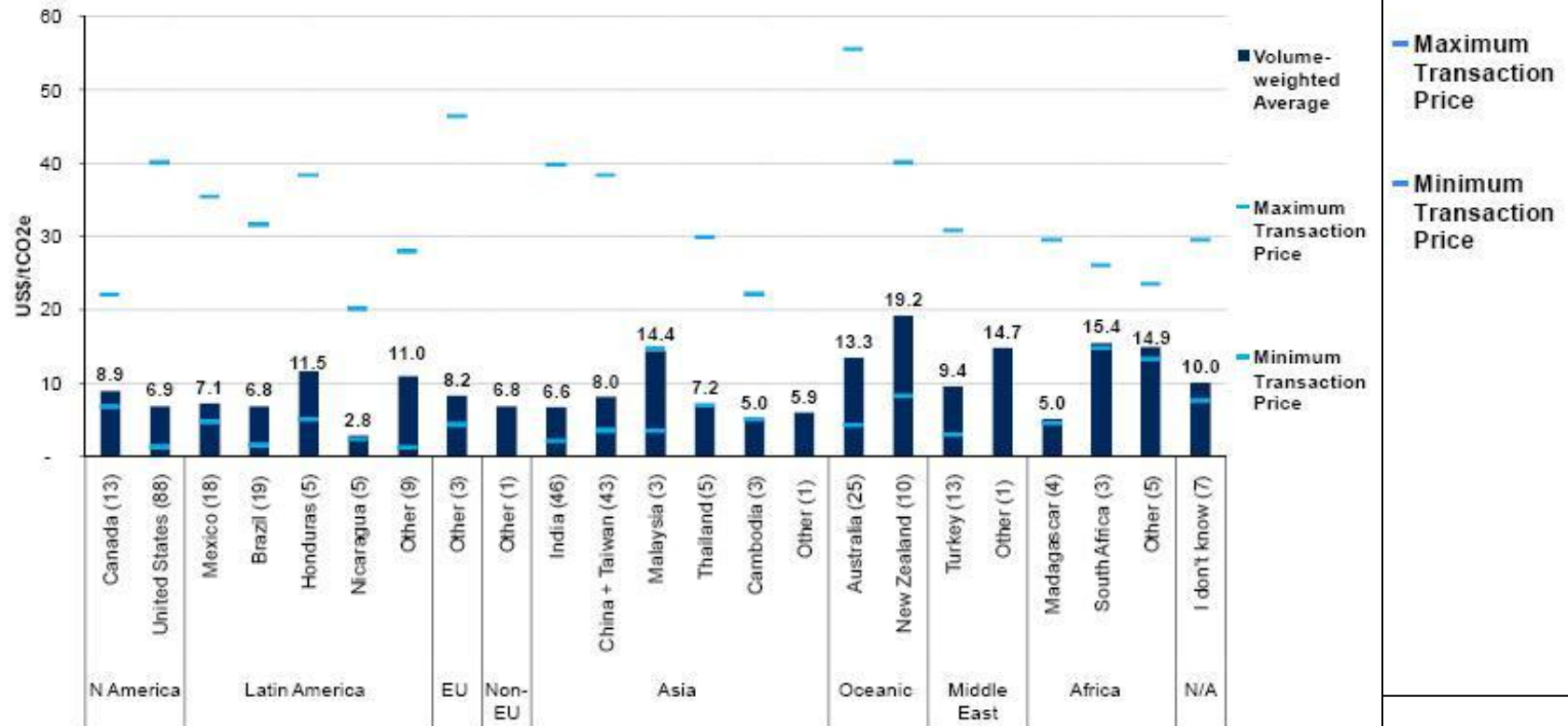
Source: Ecosystem Marketplace, New Carbon Finance.

voluntary market

Credit Price Ranges and Averages by Project Type, OTC 2008



Average Credit Price and Price Ranges by Project Location, OTC 2008



Source: Ecosystem Marketplace, New Carbon Finance. (1) Based on 330 observations

outline

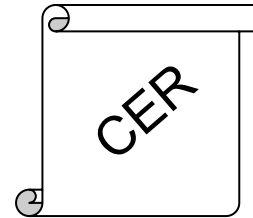
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quality = PAVER

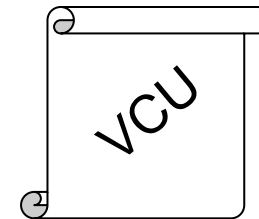
- P**ermanent must last in perpetuity, the emission reduction cannot be reversed
- A**dditional must be spurred by the carbon market, “beyond business as usual”
- V**erified must result from projects who performance can be readily monitored and verified
- E**nforceable must be backed by contracts or legal instruments that define their creation and ensure exclusive ownership
- R**eal must represent actual emission reductions that are not artifacts of incomplete or technically flawed accounting

project certification

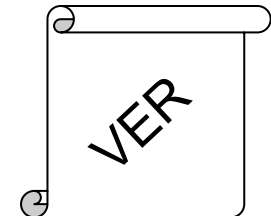
the CDM



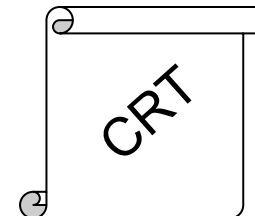
the voluntary carbon standard



the gold standard

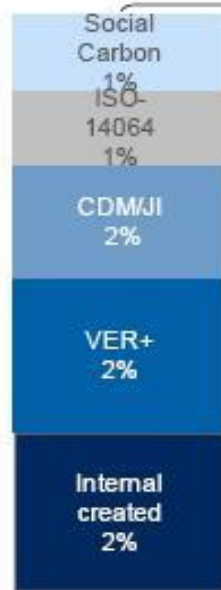


the climate action reserve

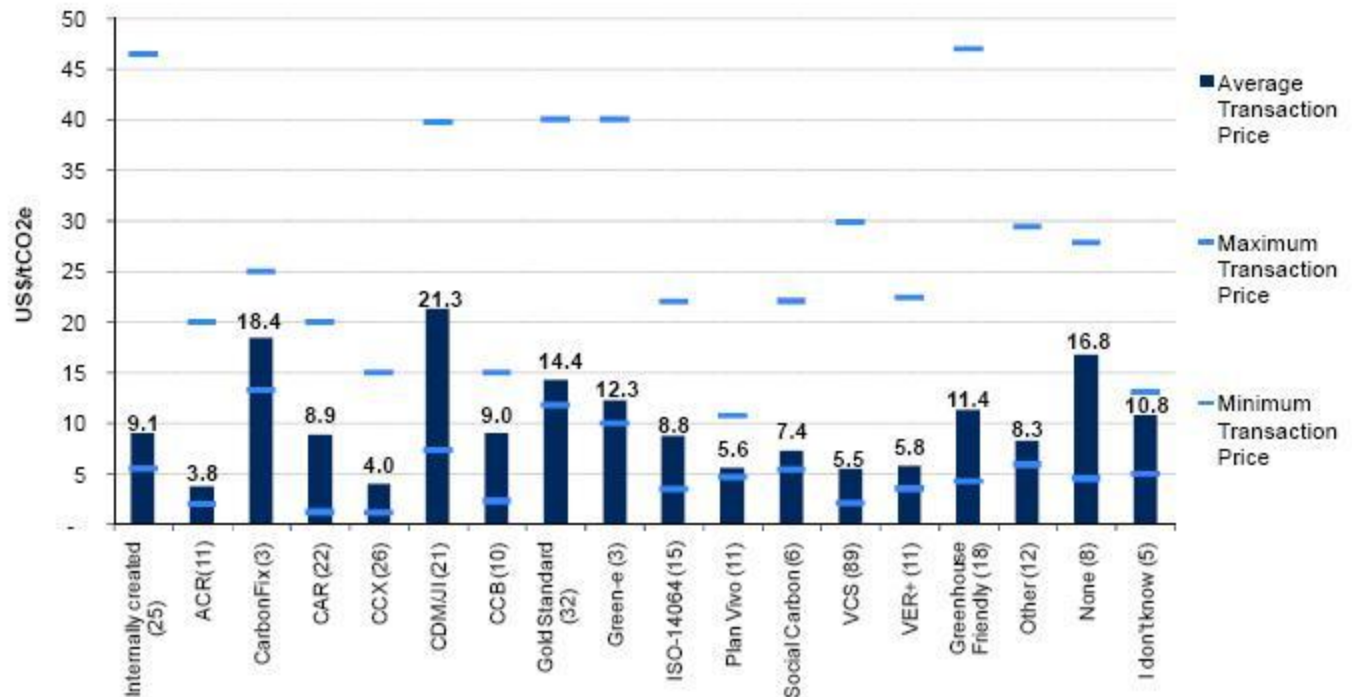


project certification

Standard Utilization, OTC 2008



Credit Prices and Price Ranges by Standard, OTC 2008



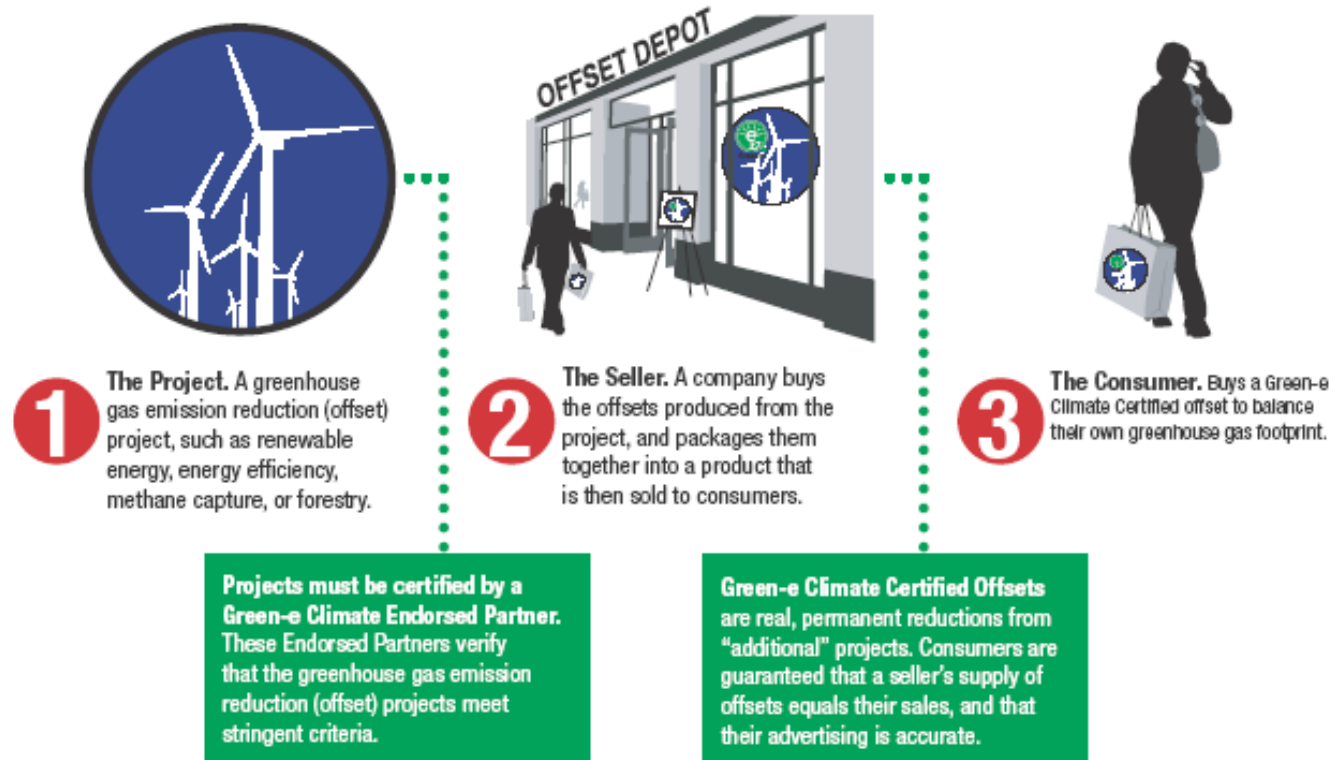
Source: Ecosystem Marke

Source: Ecosystem Marketplace, New Carbon Finance. Note: Numbers within parentheses indicate number of data points.

product certification – consumer protection

The Path of a Green-e Climate Certified Offset

How Green-e Climate certification works, from project to consumer



product certification – consumer protection

Product Name Product Content Label

Project Type	Project Certification	Project Location	% of Product*
Energy Efficiency	Gold Standard	Mexico	20%
Landfill Gas Capture	Voluntary Carbon Standard	Tanzania	40%
Renewable Energy	Green-e Climate	United States	20%
Digester Gas	Clean Development Mechanism	China	20%

The emission reductions supplied were created in:

2007-2008



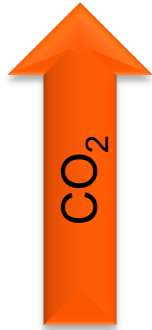
Climate
CERTIFIED

Green-e Climate is an independent certification program for greenhouse gas emission reductions (offsets) sold on the voluntary market. It provides a way to identify products that meet the program's high environmental and consumer-protection standards. For more information on Green-e Climate certification requirements, or to find certified products, see www.green-e.org or call 888-63-GREEN.

*The percentages listed are prospective. Actual figures may vary. For more information on how much they can vary see *Price, Terms & Conditions*.

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RECs vs. offsets

bundled vs. stacked commodities

REC – all the ‘green’ attributes

offset – just the carbon attribute

REC

- energy-related claims only –
 - scope 2 emissions
 - unit: MWh electricity generation

RE-derived offset

- all scopes
- additionality: timing, regulatory, and performance, barriers, or financial
- unit: tCO₂-e (requires conversion from MWh)

- a REC is not an offset – RECs transcend carbon, offsets transcend renewable energy
- but a renewable energy project can be an offset project, i.e. generate offsets...if it meets additionality requirements
- RECs and offsets cannot both be produced for the same MWh of generation...it's one or the other

Fighting Climate Change is as Easy as 1, 2, 3...

1. **REDUCE** your emissions!
2. **SWITCH** your power! Buy Green-e[®] Certified Renewable Energy
3. **OFFSET** everything else! Buy Green-e[®] Certified Carbon Offsets



Energy



Climate

Make sure you're protected!

Buy Green-e[®] Certified Renewable Energy and Carbon Offsets.

Look for the Green-e Logo!



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