First Climate is a globally leading carbon market service provider. We develop emission reduction projects, originate and trade carbon credits and manage portfolios of carbon assets. We act as a consultant to corporate and public sector clients.
Facts & Figures

- More than 500 corporate clients
- Facilitated over 200,000,000 EUR in project finance
- VERs retired on behalf of our clients: 24,000,000
- Generated 32,000,000 CERs
- We support more than 200 carbon offset projects
- Renewable energy certificates sourced on behalf of more than 150 clients

www.firstclimate.com
Outline

1. Introduction to Carbon Markets
2. Key Concepts for Baseline & Credit Mechanisms
3. Credit Types and Standards
4. The Carbon Markets to Date
Compliance vs. Voluntary Markets

• Carbon markets exist both under **compliance schemes** and as **voluntary programs**

• **Compliance markets** are created and regulated by mandatory regional, national, and international carbon reduction regimes, such as the Kyoto Protocol and the EU Emissions Trading Scheme (EU-ETS)

• **Voluntary markets** function outside of the compliance markets and enable companies, governments and individuals to purchase carbon offsets on a voluntary basis
Cap & Trade vs. Baseline & Credit

Cap & Trade Schemes (ETS)
- Regulator defines **upper limit for emissions** in selected economic **sectors** (the "Cap")
- Emissions **allowances** equal to cap are distributed/auctioned ex ante to covered entities
- Covered entities surrender allowances corresponding to their emissions after each compliance period
- **Trading of allowances** to cover shortfall, monetize surplus

Baseline & Credit Schemes
- Crediting of emission reductions achieved by specified **projects** or **programmes**
- Emission reductions quantified against a **pre-defined baseline**
- Tradable **credits**, used for compliance with mandatory or voluntary targets, including cap & trade schemes

… In GHG markets, one allowance / credit usually equals one metric tonne of carbon dioxide equivalent (1 t CO$_2$e)
From the Kyoto Protocol to the Paris Agreement

Kyoto Protocol
Adopted: 1997
Effective: 2005
Target period: 2008-2020

- International Emissions Trading (KP, Art. 17)
- Clean Development Mechanism (KP, Art. 12)
- Joint Implementation (KP, Art. 6)

EU ETS
2005

Sustainable Development Goals

Paris Agreement
COP 21
2015

ICAO Agreement
2016

Paris Agreement Mechanisms (post-2020):
- Cooperative Mechanisms (PA, Art. 6.2)
- Sustainable Development Mechanism (PA, Art. 6.4)

Kyoto Mechanisms (till 2020):
- International Emissions Trading (KP, Art. 17)
- Clean Development Mechanism (KP, Art. 12)
- Joint Implementation (KP, Art. 6)

Domestic Emissions Trading Schemes for cost-effective compliance with national / regional targets
Linking of Markets Today

- **Annex I***
  - e.g. Germany
  - EU ETS (EUA)

- **Annex I**
  - e.g. France
  - Other ETS

- **Joint Implementation (ERU)**

- **International Emissions Trade (AAU)**

- **Clean Development Mechanism (CER)**

- **Annex I**
  - e.g. Ukraine

- **non-Annex I**
  - e.g. India

- **Voluntary Carbon Market (VER)**

* Annex I to UNFCCC

Source: First Climate
Carbon Market – Key Players

- Project Owners/Sellers
- Consultants
- Standard Organizations
- Verifiers
- Registries
- Intermediary Entities
- Exchanges
- Governments
- Compliance & Voluntary Buyers
- Carbon Funds
- Brokers
- Aggregators
Outline

1. The Carbon Market
2. **Key Concepts for Baseline & Credit Mechanisms**
3. Credit Types and Standards
4. The Carbon Markets to Date
What is a Carbon Credit?

- ** Tradable certificate** representing the **reduction**, avoidance or sequestration of **one metric ton of carbon dioxide** equivalent
- Credits can be purchased to meet a specific **emission reduction target**
- Allowance ≠ Credit

**Credit Types:**
- Certified Emission Reduction (CER) – Clean Development Mechanism (CDM)
- Emission Reduction Unit (ERU) – Joint Implementation (JI)
- Climate Reserve Ton (CRT) – Climate Action Reserve
- Registry Offset Credits (ROCs) + Early Action Offset Credits (EAOCs) – American Carbon Registry (ACR)
- Verified Emission Reduction (VER) – Voluntary Carbon Market
- “Mitigation outcome” – SDM/EMM, Article 6, Paris Agreement
Baselines, Additionality, Quality

- Emission reductions are calculated against a hypothetical reference scenario (baseline)
- Baselines are set pursuant to pre-approved methodologies
- Project is additional if it is not the most likely baseline scenario
- Different additionality tests: positive lists, investment analysis, barrier analysis, common practice analysis

Quality of carbon credits mainly dependent on:
- Robustness of additionality test
- Robustness of ER calculation and MRV methodology
- Ancillary benefits re. sustainable development goals

"Environmental Integrity"
Avoiding Double Counting

- Two parties should **not count the same emission reductions** towards their target achievement
- Under Kyoto Protocol, established modalities (adjustment of Assigned Amounts)
- Under Paris Agreement, modalities to be agreed
Outline

1. The Carbon Market
2. Key Concepts for Baseline & Credit Mechanisms
3. Credit Types and Standards
4. The Carbon Markets to Date
## UN Baseline & Credit Mechanisms

<table>
<thead>
<tr>
<th>Features</th>
<th>Clean Development Mechanism (CDM)</th>
<th>Joint Implementation (JI)</th>
<th>Sustainable Development Mechanism (SDM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Governing Body &amp; Legal basis</strong></td>
<td>UNFCCC Kyoto Protocol</td>
<td>UNFCCC Kyoto Protocol</td>
<td>UNFCCC Paris Agreement</td>
</tr>
<tr>
<td><strong>Carbon Unit</strong></td>
<td>Certified Emission Reduction (CER)</td>
<td>Emission Reduction Unit (ERU)</td>
<td>PA, Art. 6.4, to be specified</td>
</tr>
<tr>
<td><strong>Main Markets</strong></td>
<td>Compliance</td>
<td>Compliance</td>
<td>Compliance</td>
</tr>
<tr>
<td><strong>Regional Scope</strong></td>
<td>Projects hosted by Non-Annex 1* (&quot;developing&quot;) countries</td>
<td>Projects hosted by Annex 1* (&quot;industrialized&quot;) countries</td>
<td>Global</td>
</tr>
<tr>
<td><strong>Project Types</strong></td>
<td>All except nuclear &gt; 180 approved methodologies</td>
<td>No restrictions, &quot;ad hoc methodologies&quot;</td>
<td>Eligible types and methodologies to be specified</td>
</tr>
</tbody>
</table>

* Annex 1 to UNFCCC

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UN Baseline & Credit Mechanisms

- **Clean Development Mechanism (CDM)**: Features include the Clean Development Mechanism (CDM), which is governed by the UNFCCC Kyoto Protocol. The carbon unit is the Certified Emission Reduction (CER). The main markets are compliance.

- **Joint Implementation (JI)**: This mechanism is governed by the UNFCCC Kyoto Protocol and is associated with the Emission Reduction Unit (ERU). The regional scope includes projects hosted by Annex 1* countries and is global in nature.

- **Sustainable Development Mechanism (SDM)**: This mechanism is governed by the UNFCCC Paris Agreement and is associated with PA, Art. 6.4, to be specified. The regional scope is global, and the project types are subject to specified methodologies.
# Other Baseline & Credit Standards

<table>
<thead>
<tr>
<th>Features</th>
<th>Gold Standard (GS)</th>
<th>Verified Carbon Standard (VCS)</th>
<th>Climate Action Reserve (CAR)</th>
<th>American Carbon Registry (ACR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governing Body</td>
<td>Gold Standard Foundation</td>
<td>VCS Association</td>
<td>California Air Resources Board</td>
<td>Winrock Board of Directors</td>
</tr>
<tr>
<td>Carbon Unit</td>
<td>Verified Emission Reduction (VER)</td>
<td>Verified Carbon Unit (VCU)</td>
<td>Climate Reserve Ton (CRT)</td>
<td>Registry Offset Credits (ROCs) + Early Action Offset Credits (EAOCs)</td>
</tr>
<tr>
<td>Type of Market</td>
<td>Voluntary and Compliance Market</td>
<td>Voluntary Market</td>
<td>Voluntary carbon market and California's regulated carbon market</td>
<td>Voluntary carbon market and California's regulated carbon market</td>
</tr>
<tr>
<td>Regional Scope</td>
<td>Implemented in countries without an emission cap</td>
<td>Implemented in non-Annex 1 countries + in countries without an emission cap</td>
<td>USA</td>
<td>California compliance market + global voluntary carbon market</td>
</tr>
<tr>
<td>Project Types</td>
<td>EE, RE, Afforestation</td>
<td>All including REDD, excluding new HFC</td>
<td>GHG reduction</td>
<td>All types</td>
</tr>
</tbody>
</table>

... plus domestic standards e.g. in Japan, Australia, Switzerland, …
Outline

1. The Carbon Market
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4. The Carbon Markets to Date
Reach
4 continents,
35 Countries,
13 Provinces/States,
7 Cities

Carbon offsetting
Integral part of most
ETS

Constant Expansion
New ETS to be
launched in Asia and
LAC region;
linking of schemes
being tested

Carbon Price and Emissions Coverage

Annual and cumulative CER and ERU Issuance, secondary CER Prices and Voluntary Offset Issuance

Future Scenario: Potential Supply of CERs until 2020

Aviation Industry – Climate Neutral Growth 2020

Source: ICAO
Aviation Industry – Future Emissions Scenarios

Wrap-up: What is a Carbon Credit?

- **Certified outcome** of an emissions-reducing activity ("project" or "program")
- **Financial incentive** to stimulate additional emission reductions
- **Instrument for compliance** with mandatory or voluntary emissions targets
- Variety of **different crediting schemes** and project types
- **Quality matters!**
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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</thead>
<tbody>
<tr>
<td>AAU</td>
<td>Assigned Amount Unit</td>
</tr>
<tr>
<td>ACR</td>
<td>American Carbon Registry</td>
</tr>
<tr>
<td>CAR</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<tr>
<td>CER</td>
<td>Certified Emission Reduction</td>
</tr>
<tr>
<td>CO2</td>
<td>Carbon dioxide</td>
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<tr>
<td>COP</td>
<td>Conference of the Parties</td>
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<tr>
<td>CORSIA</td>
<td>Carbon Offset and Reduction Scheme for International Aviation</td>
</tr>
<tr>
<td>CRT</td>
<td>Climate Reserve Tonne</td>
</tr>
<tr>
<td>EAOC</td>
<td>Early Action Offset Credit</td>
</tr>
<tr>
<td>EIT</td>
<td>Economies in Transition</td>
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<tr>
<td>ERU</td>
<td>Emission Reduction Unit</td>
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<tr>
<td>ETS</td>
<td>Emissions Trading System</td>
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<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EUA</td>
<td>EU Allowance Unit</td>
</tr>
<tr>
<td>EU ETS</td>
<td>European Union Emissions Trading System</td>
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<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
</tr>
<tr>
<td>GS</td>
<td>Gold Standard</td>
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</tbody>
</table>
Glossary (cont.d)

ICAO  International Civil Aviation Organization
IET   International Emissions Trading
ITMO  Internationally Transferred Mitigation Outcomes
JI    Joint Implementation
MRV   Monitoring, Reporting and Verification
NDC   Nationally Determined Contribution
PA    Paris Agreement
REDD+ Reducing Emissions from Deforestation, Forest Degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stock
RGGI  Regional Greenhouse Gas Initiative
ROCs  Registry Offset Credits
SDM   Sustainable Development Mechanism
VER   Verified Emission Reductions
VCU   Verified Carbon Unit
VCS   Verified Carbon Standard
UNFCCC United Nations Framework Convention on Climate Change