

Webcast Summary:

EPRI GHG Emissions Offset Policy Dialogue Workshop #8:

Offset Project Development and Approval Processes

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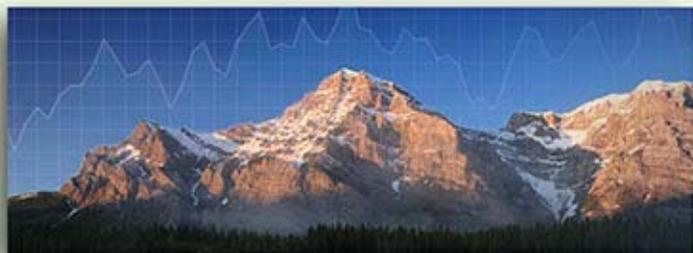
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EPRI Greenhouse Gas Emissions Offset Policy Dialogue Workshop #8

Offset Project Development and Approval Processes

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Original Workshop – June 24, 2010
Washington, D.C.

Today's Topics

1. EPRI's GHG Emissions Offsets Policy Dialogue
2. Overview of Offset Methodologies, Approval and Issuance Processes
3. UN Clean Development Mechanism (CDM)
4. Voluntary Carbon Standard (VCS)
5. Climate Action Reserve (CAR)
6. American Carbon Registry (ACR)
7. Chicago Climate Exchange (CCX)



Part 1: EPRI GHG Offsets Policy Dialogue



EPRI's GHG Emission Offsets Workshops Have Facilitated Technical Discussions

- Ongoing series of technical workshops in Washington DC
- Brings together a wide array of technical experts, advocacy groups, stakeholders, and policy actors (e.g., Congressional & Administration staff)
- Focus is to understand and communicate technical, economic and policy issues critical to including offsets in climate policy
- Workshop goals:
 - Inform key constituencies
 - Provide a forum for discussion
 - Build a common understanding of offset system design elements and issues
 - Explore new ideas and approaches
 - Discuss potential offset mechanisms



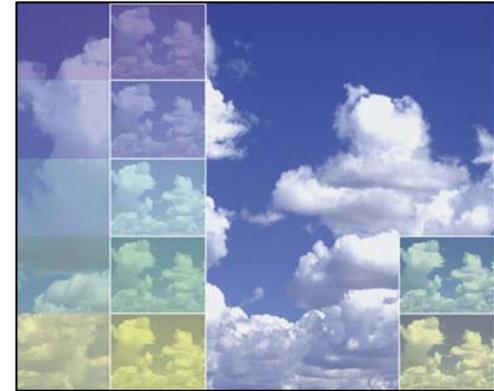
- 2008 Workshops
 - Existing Offset Systems
 - “Additionality” & “Supplementarity” Limits
 - Proposed Offset Policy Designs
- 2009 Workshops
 - Forestry and Agriculture Offsets
 - Reduced Emissions from Deforestation and Degradation (REDD)
 - “Road Testing” of Offset Methodologies
- 2010 Workshops
 - “Sectoral” and Scaled-up International Mechanisms (Done 2/25/10)
 - **Offsets Approval and Issuance Processes (June 24, 2010)**
 - **TBD (Oct/Nov 2010)**

8th Workshop Meeting Materials

- Speaker presentations & other workshop materials available online at:
globalclimate.epri.com

Direct URL:

http://globalclimate.epri.com/annual_events__ghg_offset_policy_dialogue.html

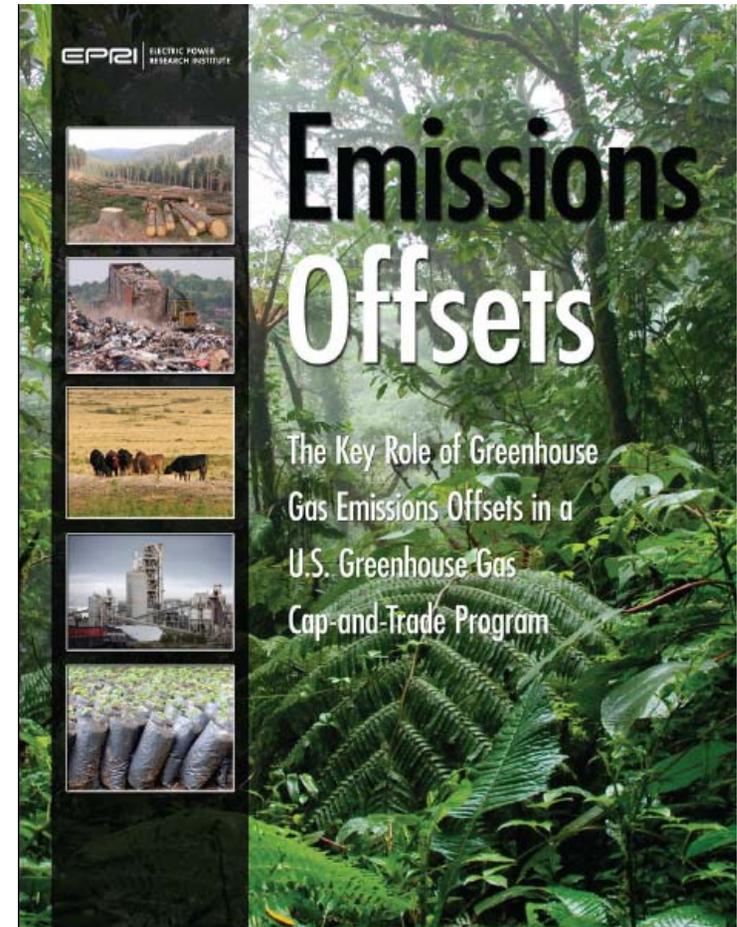


- Background paper:

“A Comparison of Greenhouse Gas Emissions Offsets Project Development and Approval Processes”

Key EPRI Offsets Documents

- Emissions Offsets: *The Key Role of Greenhouse Gas Emissions Offsets in a U.S. Greenhouse Gas Cap-and-Trade Program.* (2010). EPRI document #1019910.
- Key Issues in *Designing Mechanisms to Reduce Greenhouse Gas Emissions from Deforestation and Degradation (REDD).* (2009) EPRI document #1017998
- *The EPRI Greenhouse Gas Emissions Offset Policy Dialogue: Description of Key Issues in the Design of GHG Emissions Offset Programs.* (2008) EPRI document #1015633
- “*A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions.*” (2007) EPRI document #1014085
- “*Guidance for Electric Companies on the Use of Forest Carbon Sequestration Projects to Offset Greenhouse Gas Emissions.*” (2006) EPRI document #1012576



http://globalclimate.epri.com/results_and_publications_ghg_offset_policy.html

Part 2: Overview of Offsets Methodologies, Approval and Issuance Processes

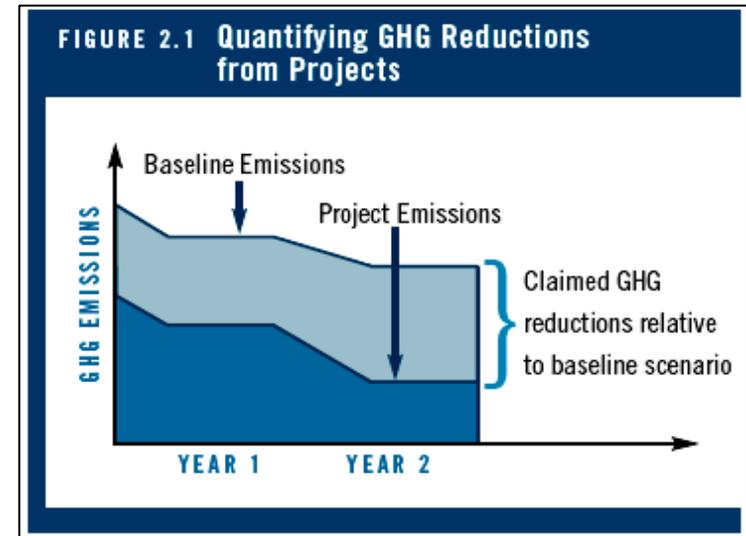


Workshop 8 Goals – Offsets Development and Approval Process

- Gain a better understanding of key elements of the offsets project development cycle, and different policy approaches for addressing key issues
 1. Methodology development
 2. Additionality and baselines
 3. Measurement, Reporting and Verification (MRV)
 4. Review issues unique to each offsets program discussed today
- Understand the different approaches Adapted by key existing voluntary and compliance offset programs
 - Clean Development Mechanism (CDM)
 - Climate Action Reserve (CAR)
 - Voluntary Carbon Standard (VCS)
 - American Carbon Registry (ACR)
 - Chicago Climate Exchange (CCX)
 - NSW Greenhouse Gas Abatement Scheme (GGAS)

What are GHG Offsets?

- “Credits” for GHG emission *reductions, avoidance or sequestration* that occur in sectors or geographic regions **outside of an emissions cap**
- Offsets = Difference between “baseline” and “project” CO₂ emissions
Offsets = Baseline_{CO2} - Project_{CO2}



Source: *The Greenhouse Gas Protocol: Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects*, World Resources Institute (WRI) and World Business Council for Sustainable Development (WBSCD), 2007.

GHG emissions reductions typically must be *real, additional, permanent, measurable and verifiable.*

Generic Offset Project Development

Key Process Steps

1. Methodology development

- Methodology (protocol) development, approval, and revision
- Definition of eligibility/additionality and baselines

2. Initial assessment & approval

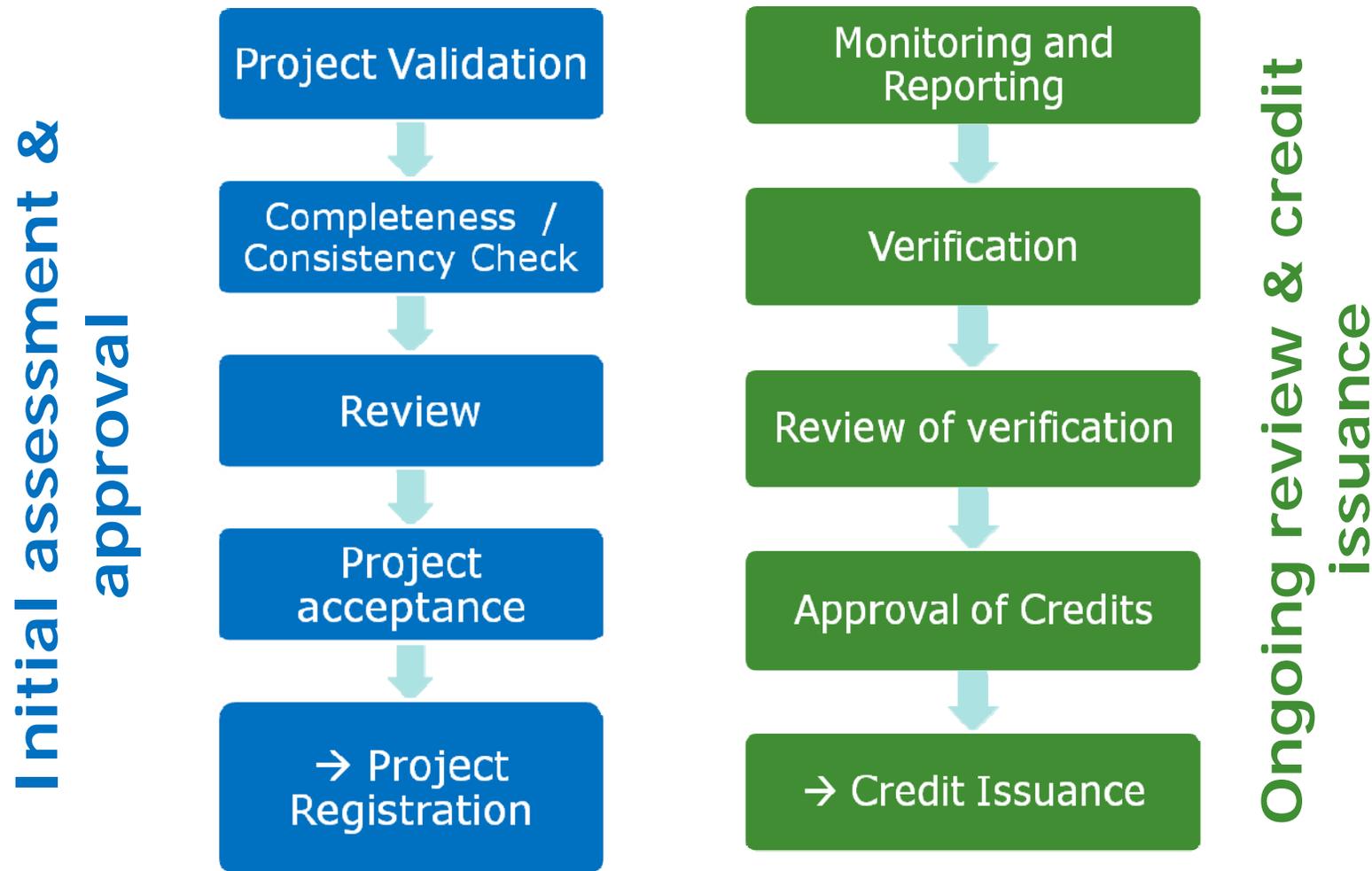
- Project documentation
- Validation
- Registration / Listing

3. Ongoing review & credit issuance

- Monitoring and Reporting
- Verification / Certification
- Credit issuance

Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Generic Offsets Development and Issuance Processes



Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Carbon Standards / Programs / Registries

- **Standard** provides the overall requirements . . .
 - Principles (e.g., relevance, transparency, conservativeness)
 - Criteria for reductions (e.g., additionality, ex-post vs. ex-ante, permanence, MRV)
- **Program** provides the specific rules and infrastructure . . .
 - Process for approval of new methodologies/protocols
 - Systems for accreditation of validation/verification bodies
 - Rules for registering projects and issuing credits (registries)
- **Registry** provides the tracking system . . .
 - Avoid double selling of credits
 - Transparency

Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Existing GHG Emissions Offsets Programs



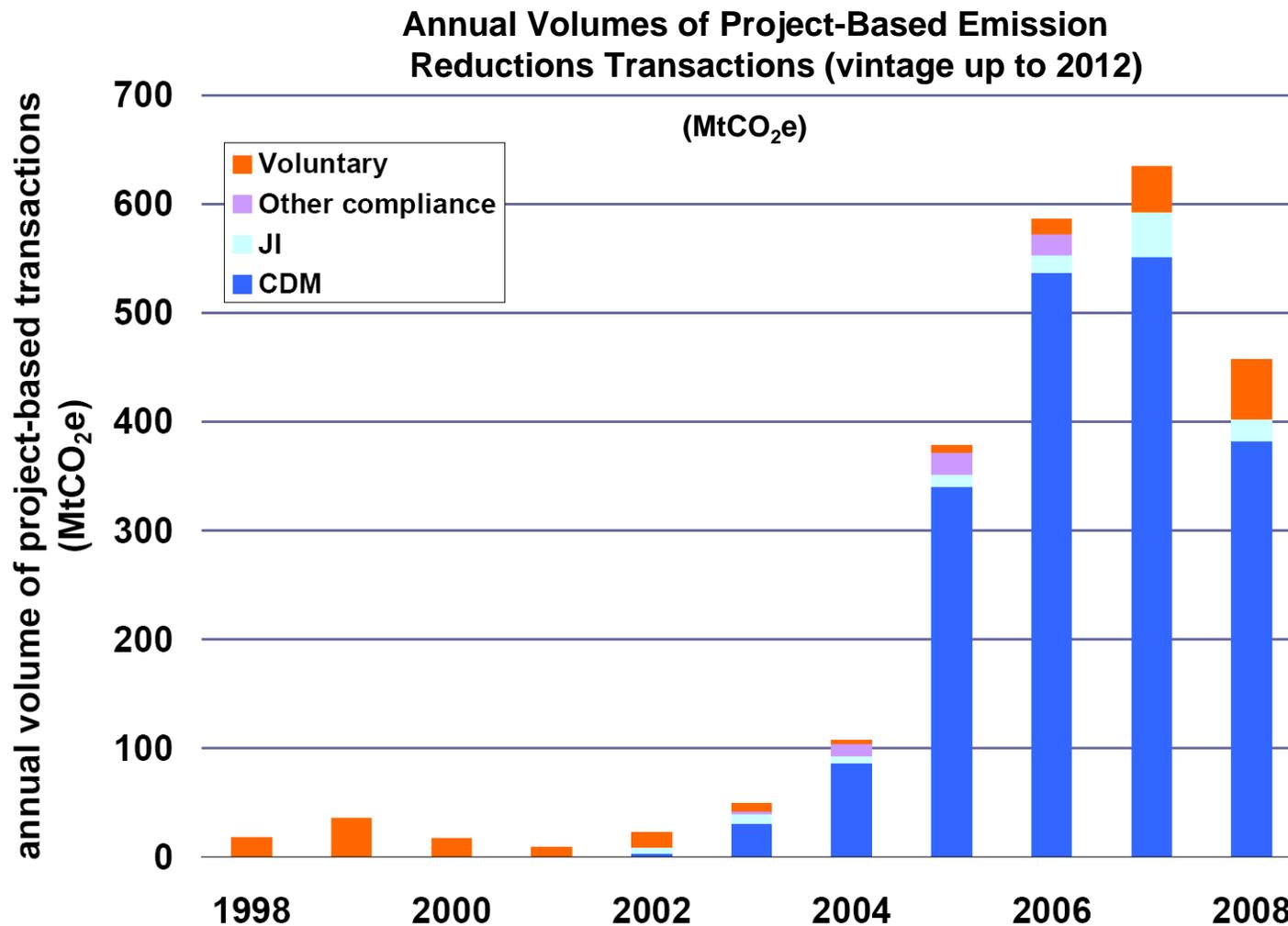
CLIMATE
ACTION
RESERVE

Regional Greenhouse Gas Initiative



Western Climate Initiative

CDM Transactions Dominate Offset Transactions



Source: State and Trends of the Carbon Market 2009, The World Bank, Washington, D.C., May 2010, Figure 2, p 31.

Voluntary Offset Supplies are Limited

Figure 2: Major voluntary offset programmes, 2003-09 (MtCO₂)

	Project	Amount of offsets issued*	Offsets from US based projects
Voluntary Carbon Standard (VCS)	Agriculture & forestry	0.1 1 project	0.1 1 project
	Other	13.1 167 projects	2.7 7 projects
Climate Action Reserve (CAR)	Agriculture & forestry	1.2 8 projects	1.2 8 projects
	Other	0.6 12 projects	0.6 12 projects
Chicago Climate Exchange (CCX)	Agriculture & forestry	28.8 50 projects	16.4* 42 projects
	Other	34.7 115 projects	19.8* 52 projects
American Carbon Registry (ACR)	Agriculture & forestry	0.1 1 project	0.1 1 project
	Other	28.3 20 projects	28.3 17 projects
Total	Agriculture & forestry	30.0 60 projects	17.8 52 projects
	Other	76.8 314 projects	51.4 88 projects

Note: *The total amount of offsets issued includes projects from overseas. CCX numbers for US-based projects are Barclays Capital estimate.

Source: VCS, CAR, CCX, ACR, Barclays Capital

Source: Barclays Capital, Carbon Flash US Offset Supply, 4/7/2010.

Summary 2003-09

All Projects

- 374 total projects
 - 60 Ag & Forestry
 - 314 “Other”
- Total offsets = 107 MtCO₂
 - 30 Mt Ag & Forestry
 - 77 Mt “Other”

US Projects Only

- 140 projects in the U.S.
 - 52 Ag & Forestry
 - 88 “Other”
- 69 MtCO₂ offsets issued in the U.S.
 - 18 Mt Ag & Forestry
 - 51 Mt “Other”

Program Characteristics Influence Methodologies, Baselines, MRV & Issuance

- Program purpose:
 - Compliance versus voluntary?
 - Pre-compliance or CSR?
- Administration:
 - Government, NGO, private, or intergovernmental?
- Project locations:
 - North America, Annex 1 / Non-Annex 1, global?
- Predominant project types
 - “Uncapped” sectors or full economy?

Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Offset Methodology Development

- What's at stake?
 - Eligibility/additionality, baselines, leakage, and MRV
 - Requires technical knowledge and judgment
- Determines:
 - Who plays in the market
 - Environmental outcome
- Who develops, reviews, and approves them?
- Who pays and who plays?
- How and when can they be revised?

Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Two Approaches to Offset Methodology Development

- **Bottom-up** (CDM, VCS)
 - Develop: proponents
 - Review/approve: Board/Panel or auditors (VCS)
- **Top-down** (CAR, RGGI, CCX, ACR, CL...)
 - Develop: Administrator (plus advisory group)
 - Review/approve: Admin (plus stakeholders?)
 - More amenable to standardization
- Which delivers broadest & most rigorous methodologies?
- Best balances learning/correction & market certainty?
- Spreads risk, cost, and benefits?

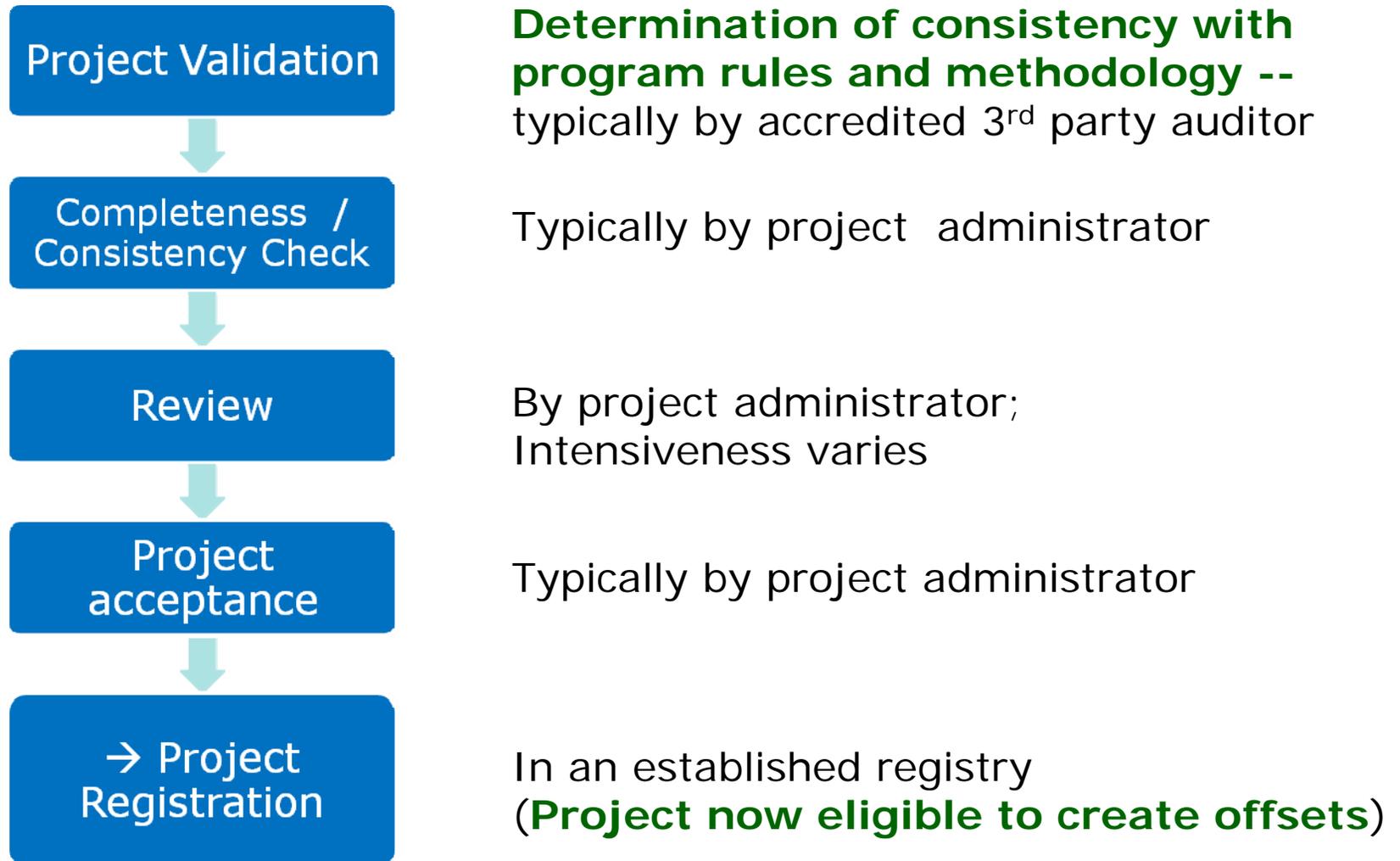
Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Offset Methodology Examples

- CDM HFC23 Methodology (AM0001)
 - Bottom up
 - Very specific industrial process; proprietary data; continuous controversy
- CDM Renewable Electricity (ACM0002)
 - Bottom up
 - Built from peer-reviewed literature;
 - generally public data; numerous revisions
- CAR Forestry Protocol
 - Top-down development;
 - many stakeholders, iterations, compromises

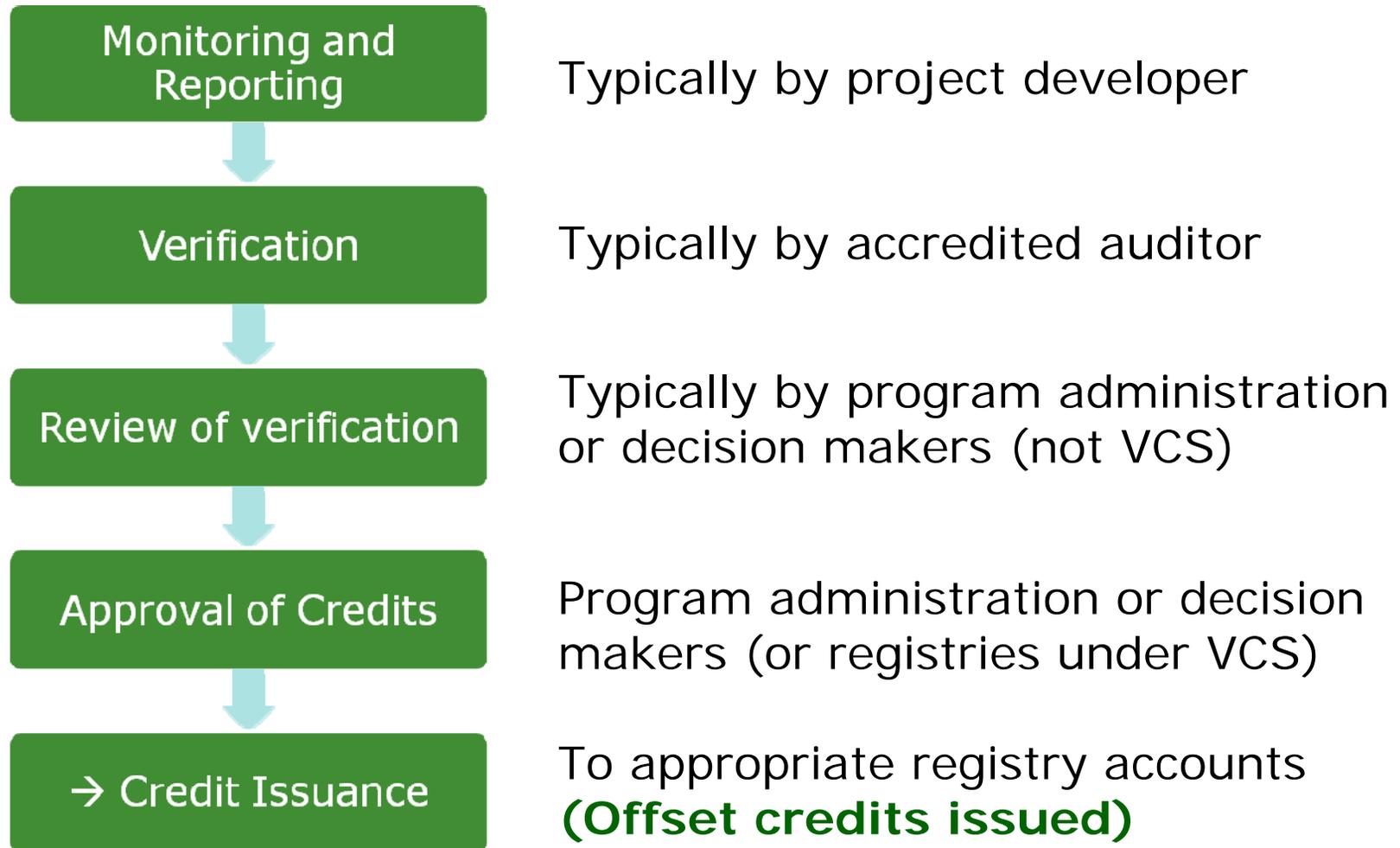
Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

2. Initial Assessment & Approval



Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

3. Ongoing review & credit issuance



Source: Adapted from presentation by Michael Lazarus, Stockholm Environmental Institute U.S. (SEI-US) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Part 3: The Clean Development Mechanism



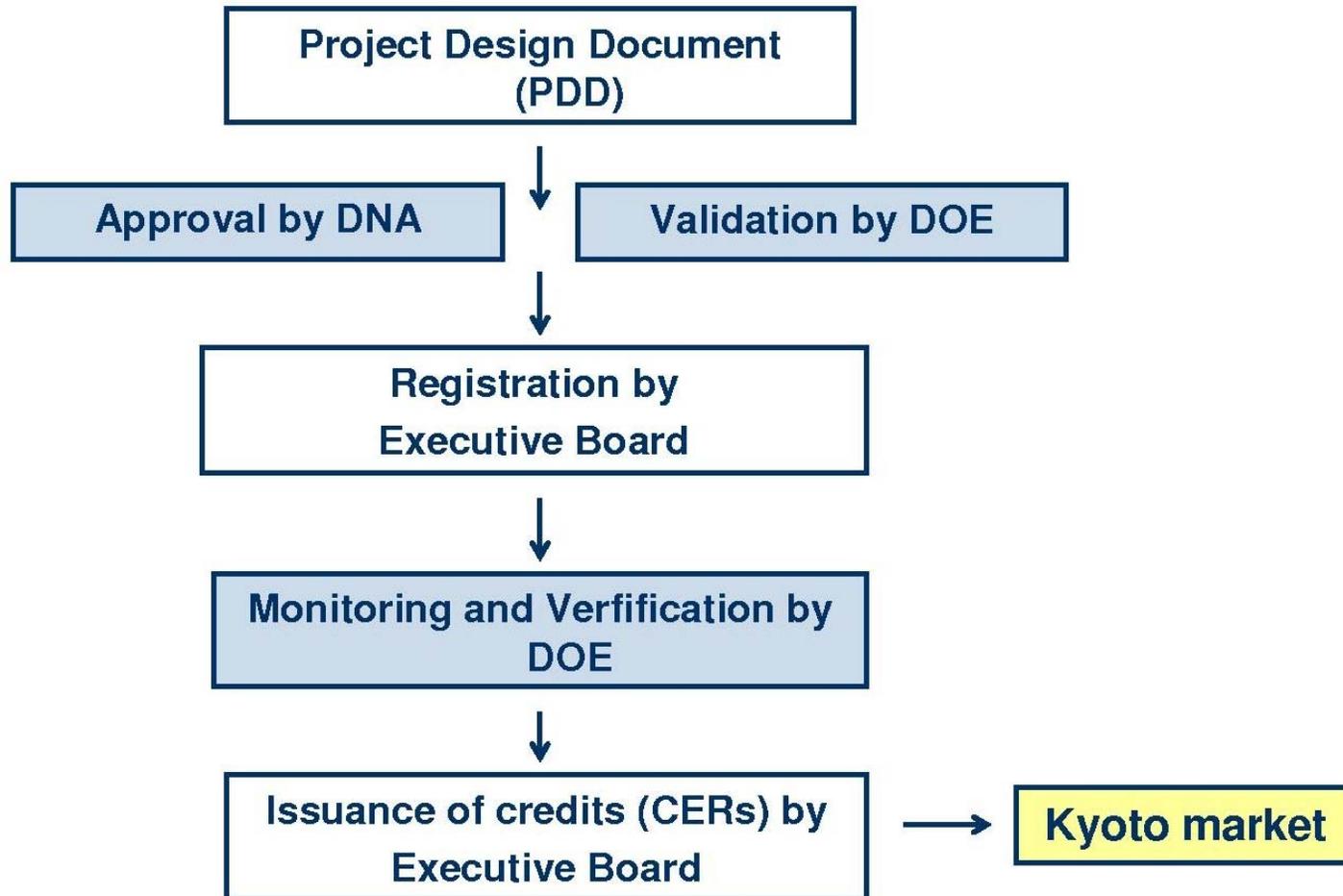
CDM General Overview

Global reach, international mandate

- CDM the largest CO₂ offset system in the world
- The mechanism has a legal basis in the Kyoto Protocol (KP)
- Run by **Executive Board (EB)** answerable to KP Parties
 - Supervisory Body - functions specified in Marrakech Accords
 - 10 Members and 10 Alternates - CVs on the Web
- EB back-stopped by **UNFCCC Secretariat** with support for:
 - Registration and issuance
 - Accreditation of third-party validators (Designated Operational Entities - DOEs)
 - Methodologies for emissions baseline setting and monitoring

Source: Adapted from presentation by Kai-Uwe Schmidt, Secretary CDM Executive Board, EPRI GHG Offsets Workshop 1, June 26, 2008 and presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

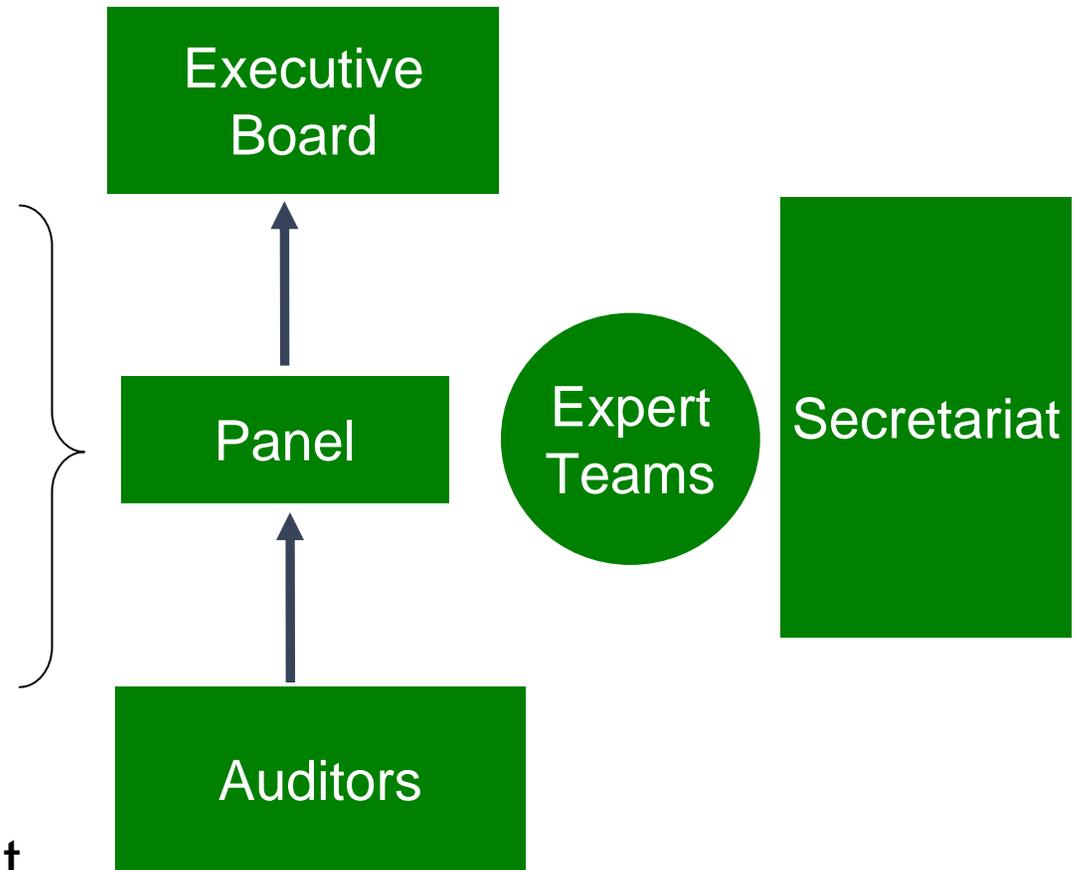
The CDM Project Development Cycle



Source: Point Carbon. Excerpted from *A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions* EPRI, Palo Alto, CA: 2007. 1014085.

CDM Panels, Working Groups & Experts

- Expert panels and working groups assist in exercising functions
 - Accreditation Panel
 - Methodology Panel
 - Small Scale & Forestry Panels
 - Registration and Issuance Teams
 - Accreditation Assessment Teams
- Roster of Experts for accreditation assessment



Source: Adapted from presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

3rd Party Auditors: Designated Operational Entities (DoEs)

- Responsible for methodology *validation* and project *verification*
- Initiate methodologies, registration requests and issuance requests
- Accredited by CDM Executive Board
 - 31 Accredited Entities
 - Primary EMS and carbon accounting companies
 - Examples: DNV, SGS, TUVs, KQS, JCI)
- Specialist Panel and Secretariat advise the Board

Source: Adapted from presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

CDM Methodology Development

- Initiated by a project proponent using a “bottom up” approach
- Standards for calculating emission reductions
- Supplemented by detailed guidance and tools on grid emissions factors, on off-grid emissions factors, additionality
- Small Scale and Forestry have separate treatment
- Specialist Panels and Secretariat support the Board
- <http://cdm.unfccc.int/methodologies/index.html>

Submission
Rounds

Analysis

EB Decision

Source: Adapted from presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

CDM: Registration & Credit Issuance

- In practice, 60-70% of projects are subject to request for review prior to registration
 - 3 Board members may request
 - Board decides whether to review
- In principle credits are issued automatically in 15 days after request for issuance
- In practice - many requests are reviewed
 - 3 Board Members may request a review
 - Board decides on whether to have a review

CDM “State of Play”

- CER credit issuances 1744 (14 rejected)
 - Total **420,943,351 CERs issued total**
 - Projects **2250 registered** (150 rejected, 49 withdrawn)
- Methodologies
 - 140 - 70 large scale
 - 50 small-scale
- Accreditation
 - 31 auditors (DoEs)
 - Currently 37 under consideration

Source: Adapted from presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

CDM is Not Likely to Scale Up to Meet Expected U.S. Offset Demand

- CDM took many years to develop
 - Kyoto protocol ratified in 1997
 - Marrakesh Accords 2003
 - First Certified Emissions Reductions (CERs) issued 2005
- CDM has issued fewer offsets than expected
 - Only ~400 MtCO₂e of CER's have been issued since inception
 - 76% of offsets issued are from HFC-23 “industrial gas” projects
 - China, India, S. Korea, Brazil account for >90% of CDM offset supply
 - <1.0 GtCO₂ cumulative expected over the “Kyoto” period (2008-2012)
 - “Ton-by-ton” approach is inefficient and cannot scale up
- U.S. buyers will face international competition for CERs
 - EU-27
 - Japan
 - Australia & New Zealand
 - Canada
- Adoption of NAMA's by key developing countries (e.g., China and Brazil) is expected to reduce offset supplies significantly

Next Steps: CDM Reform Efforts

- Three E's
 - **Effectiveness** - deliver credible tonnes
 - **Efficiency** - deliver in a predictable and timely manner
 - **Equity** - ensure equal opportunity/access
- **Standardized baselines and additionality** (COP/EB ****)
- Standardization, hierarchy and catalogue of decisions (EB)
- Publication of CVs and Terms of Reference (EB)
- Revision of Procedures (EB/COP)
- Delegation/ “Executiveness” (EB)
- Appeal Process – (EB/CO)P
- Project Development Loan Fund (EB/COP)

Source: Adapted from presentation by Martin Hession, Member, CDM Executive Board (EB) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Part 4: Voluntary Carbon Standard

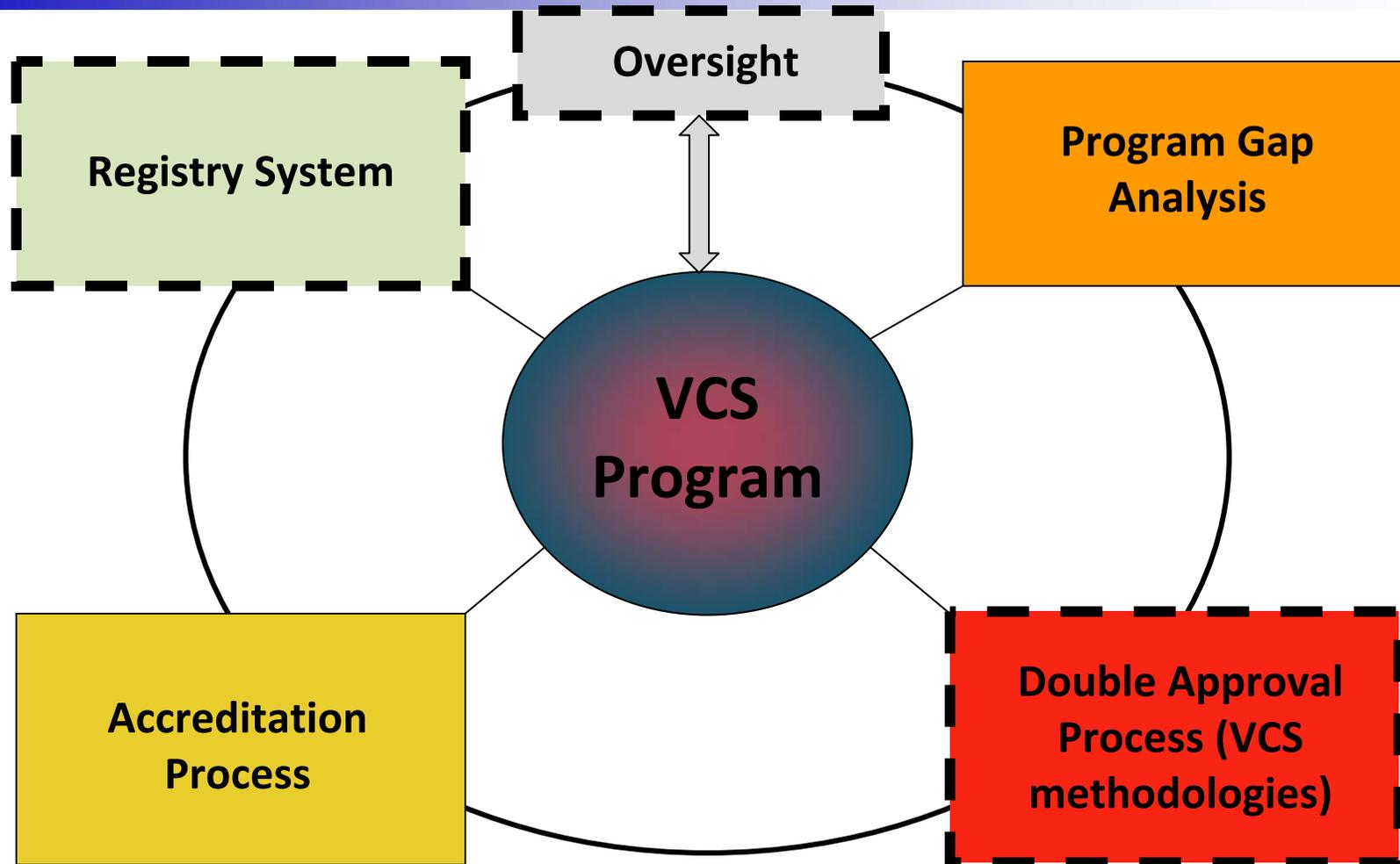


The Voluntary Carbon Standard

- Established by IETA, WBCSD, The Climate Group & WEF
- VCSA is a non-profit organization
 - Headquartered in Washington, DC
 - Also has a Swiss entity
- Single focus – to develop and manage the platform:
 - No consulting
 - No methodology development
 - No validation/verification
 - No project development or proprietary positions
- Funded primarily by VCU levy (\$0.10 per VCU)
- Foundation grants help supplement special initiatives

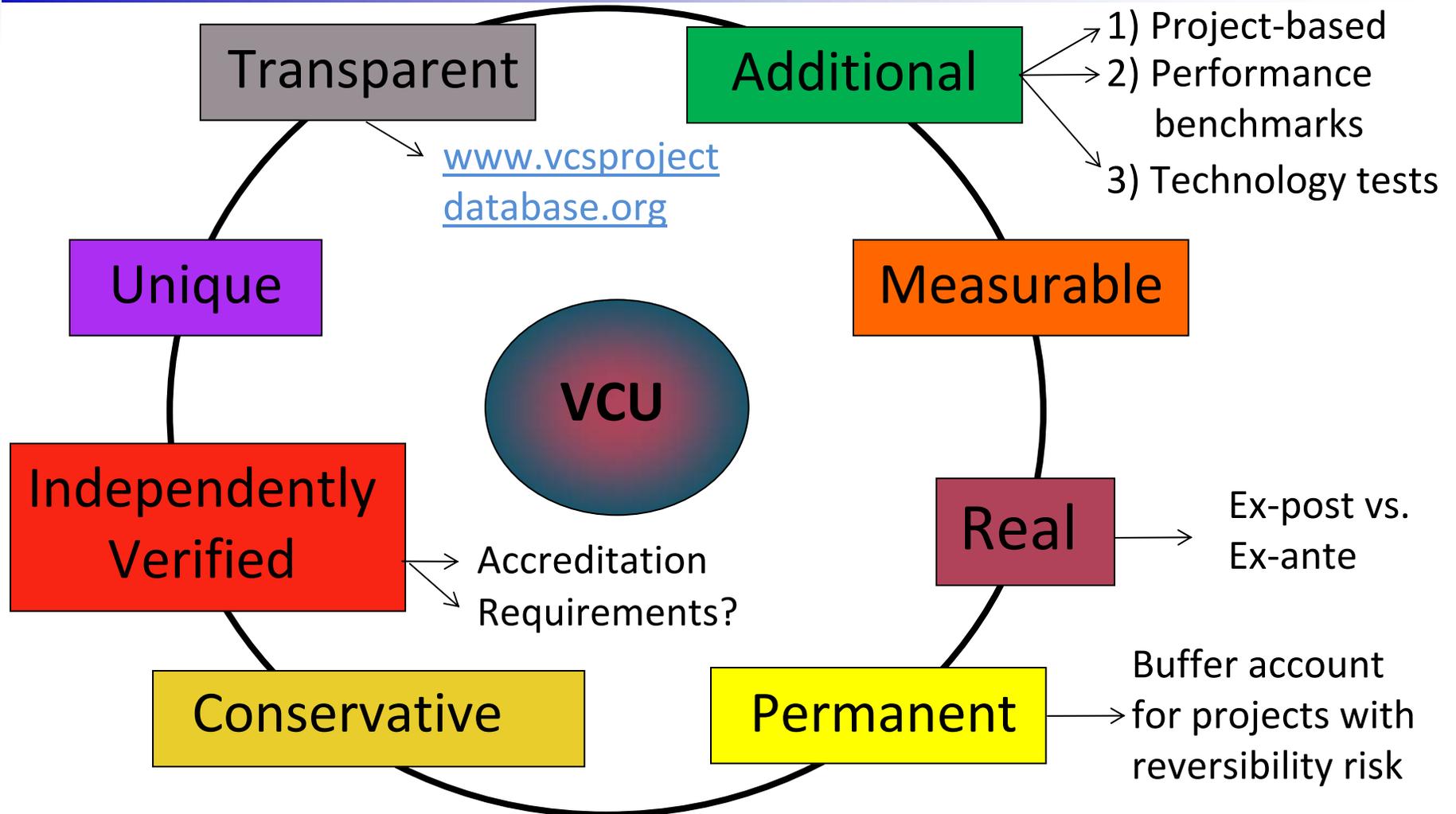
Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

The VCS Program



Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

What is a Voluntary Carbon Unit (VCU)?



Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Additionality = “Regulatory surplus” + . . .

1. **Project test** – Demonstration of barriers
 - Investment, technology, institutional
 - Common practice analysis
2. **Performance test** – Demonstration that emissions generated (or carbon sequestered) per unit output by the project are below (or above, for sequestration) the level that has been approved by the VCS Program
3. **Technology test** – Demonstration that projects using less emissions-intensive technologies meet certain performance criteria, which when met results in crediting up to a pre-determined threshold (e.g., market penetration)

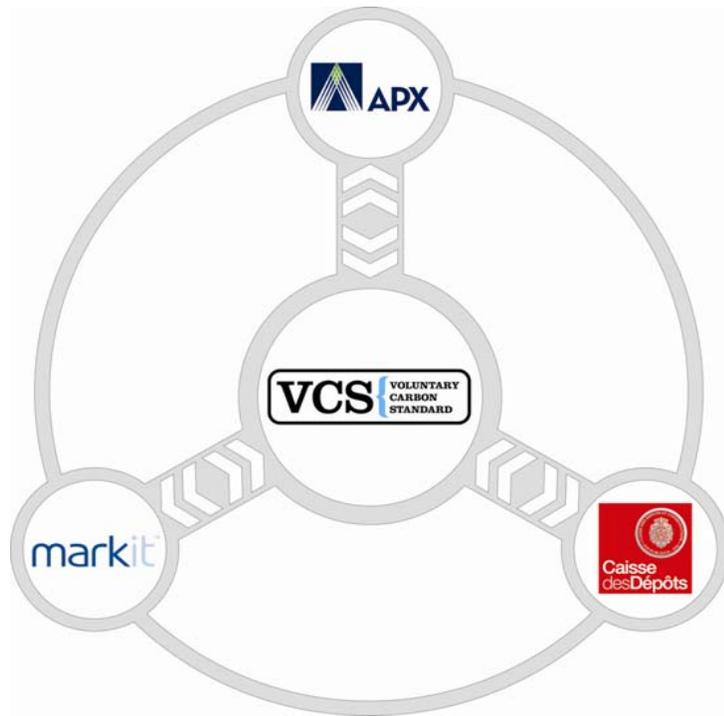
Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

VCS – Methodology Development

- Double approval process
 - 30-day public comment period on VCS website
 - Assessment by first validator (managed by developer)
 - Assessment by second validator (managed by VCSA, paid for by developer)
- Approved VCS methodologies will have grace period for use in cases where VCSA issues new requirements
- Methodologies from approved GHG programs
 - CDM/JI
 - CAR

Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

The VCS Registry System



- 3 registries meet key criteria:
 - ✓ Financial standing
 - ✓ Insolvency protection
- Registries agree to:
 - ✓ Conflict of interest requirements
 - ✓ Replacement of VCUs issued in error
- Registry system is expandable
- VCUs can be certified against other standards (e.g., CCB, Social Carbon)

Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

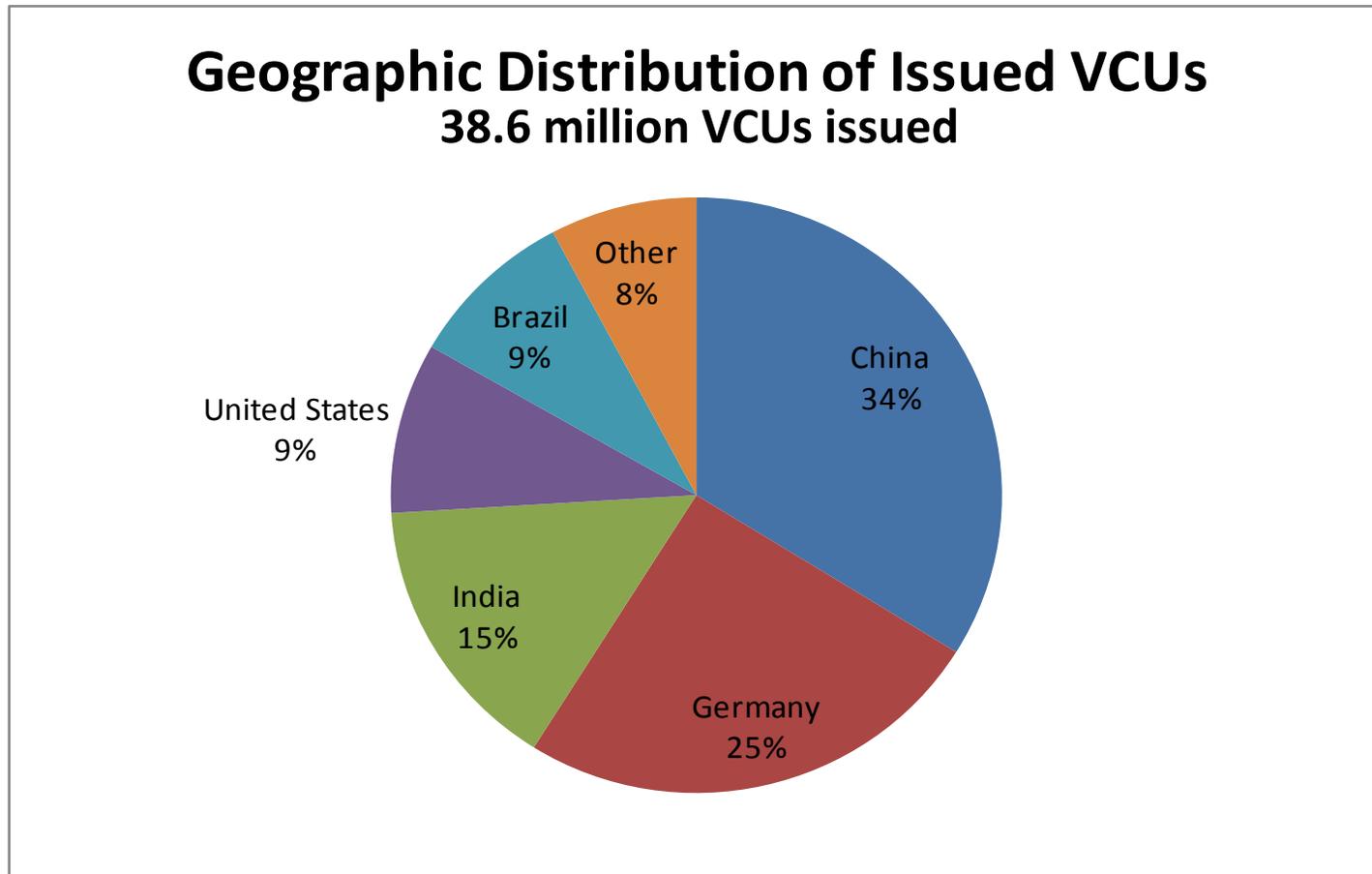
The VCS Registry System

- Registries check adherence to the VCS rules, including:
 - Completeness of project documents
 - Correctness of legal documents (PP representations, proof of right...)
 - Accreditation status of validation/verification body
 - Uniqueness of project (GPS check via VCS project database)
 - Credits not issued under another GHG program
- VCS project database (www.vcsprojectdatabase.org):
 - Serves as central clearing house for all VCS projects
 - Issues VCU serial numbers to registries
 - Maintains all project documentation
 - Tracks VCU retirement

Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

VCS Offset Trends (1 of 2)

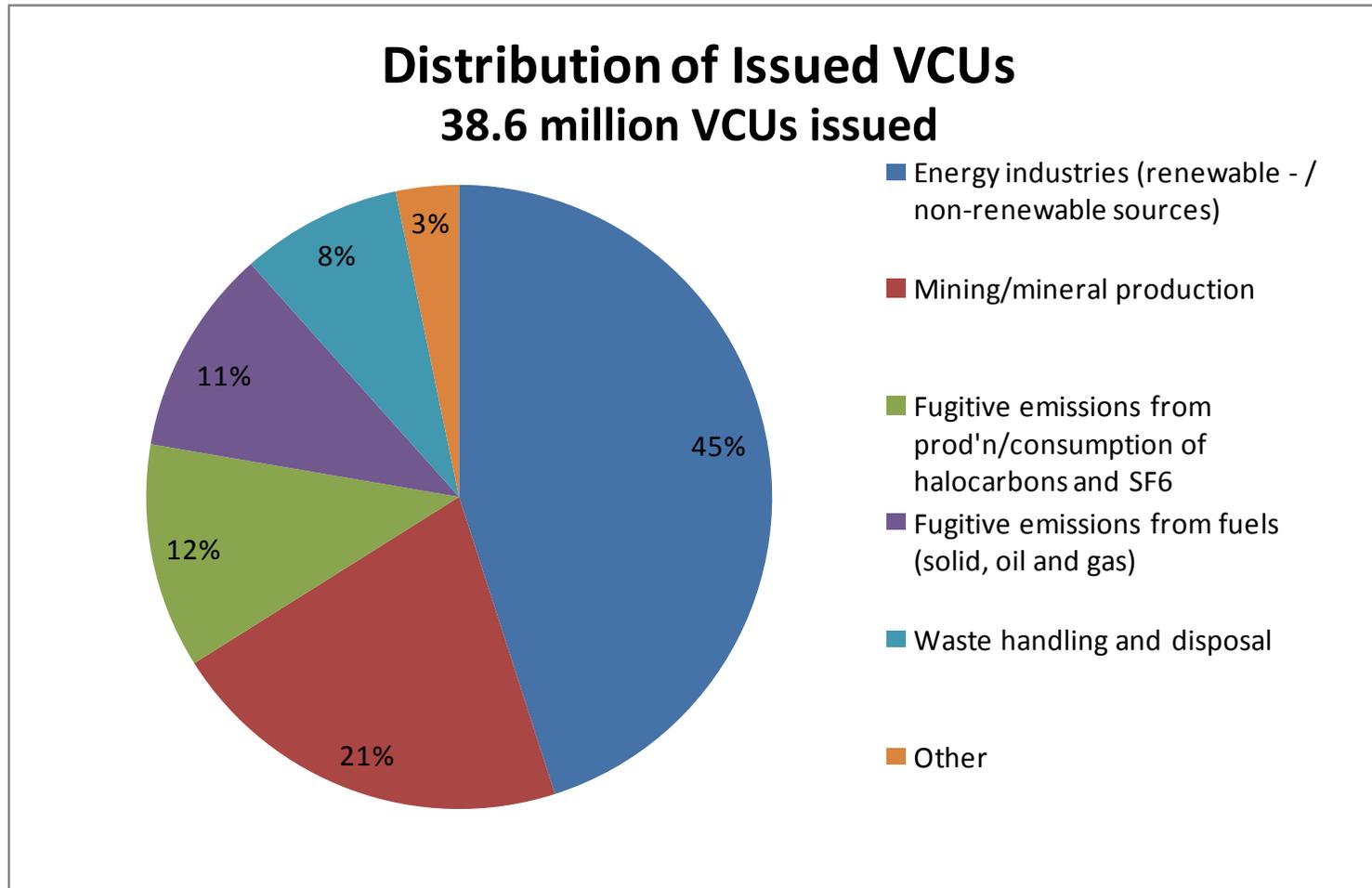
(as of June 23, 2010)



Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

VCS Offset Trends (2 of 2)

(as of June 23, 2010)



Source: Adapted from presentation by David Antonioli, CEO Voluntary Carbon Standard Association (VCSA) at EPRI 8th GHG Offsets Workshop, 6/24/10.

Part 5: Climate Action Reserve



CLIMATE
ACTION
RESERVE

Background on the Climate Action Reserve

- Chartered by CA state legislation in 2001
- **Mission:** To encourage early voluntary actions to reduce GHG emissions and to have such emissions reductions recognized
 - Initially focused on emission reporting and reductions by member organizations
 - Now focused on emission reduction projects generating offsets
- Seeks to balance business, government, and environmental interests

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

What CAR Does

- Develop **high quality standards**
 - Convene stakeholders and lead development of standardized protocols for carbon offset projects
- Manage independent **third-party verification**
 - Training and oversight of independent verification bodies
- Operate a **transparent registry system**
 - Maintain registry of approved projects
 - Issue and track serialized credits generated by projects

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

Existing CAR Protocols

- Forestry
 - Improved forest management
 - Avoided conversion
 - Reforestation
- Urban forestry
- Landfill gas capture (US & Mexico)
- Livestock methane capture (US & Mexico)
- Organic waste digestion
- Coal mine methane
- Nitric acid production
- Ozone depleting substances (US & Article 5 sources)

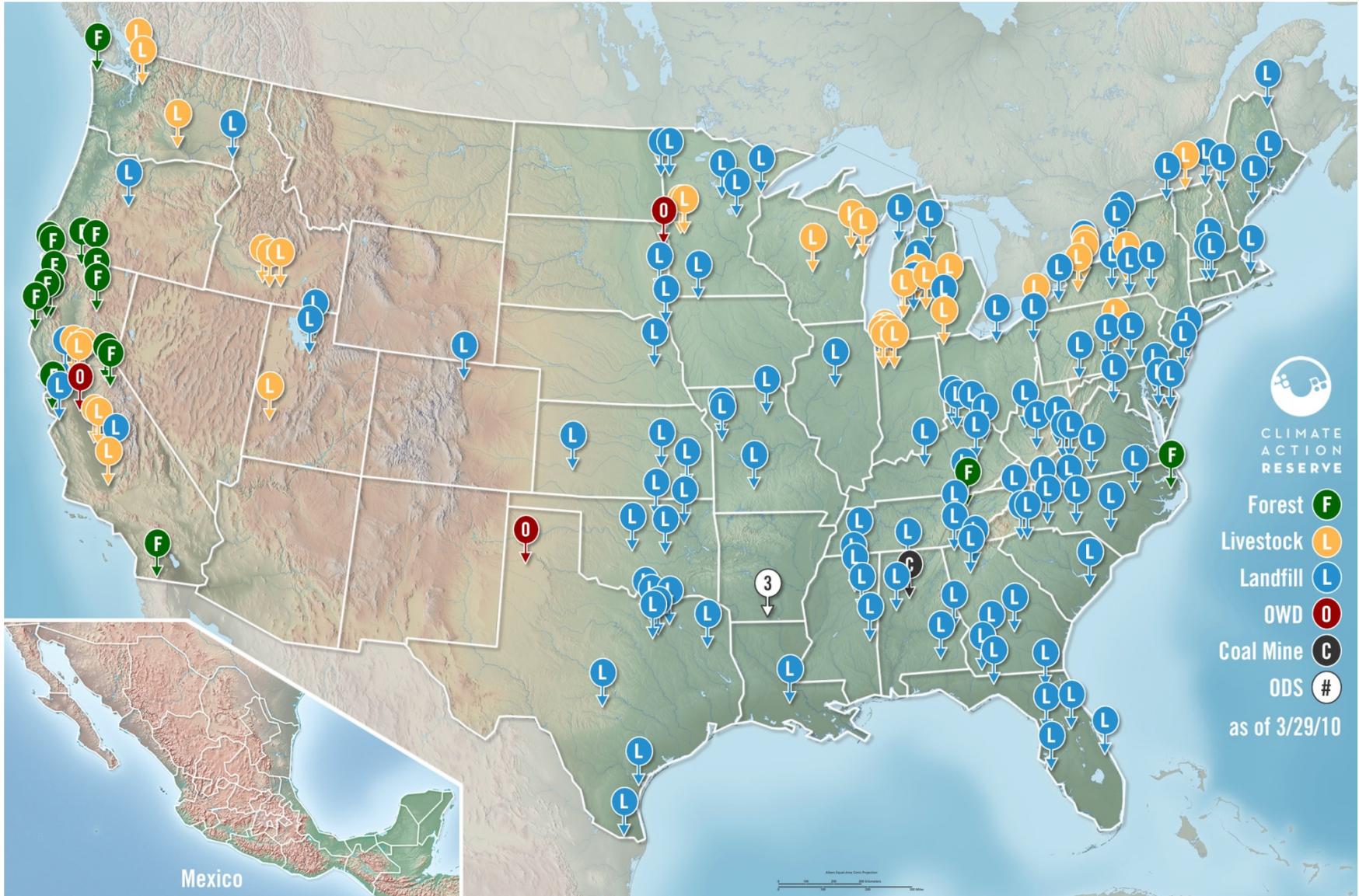
Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Program Statistics

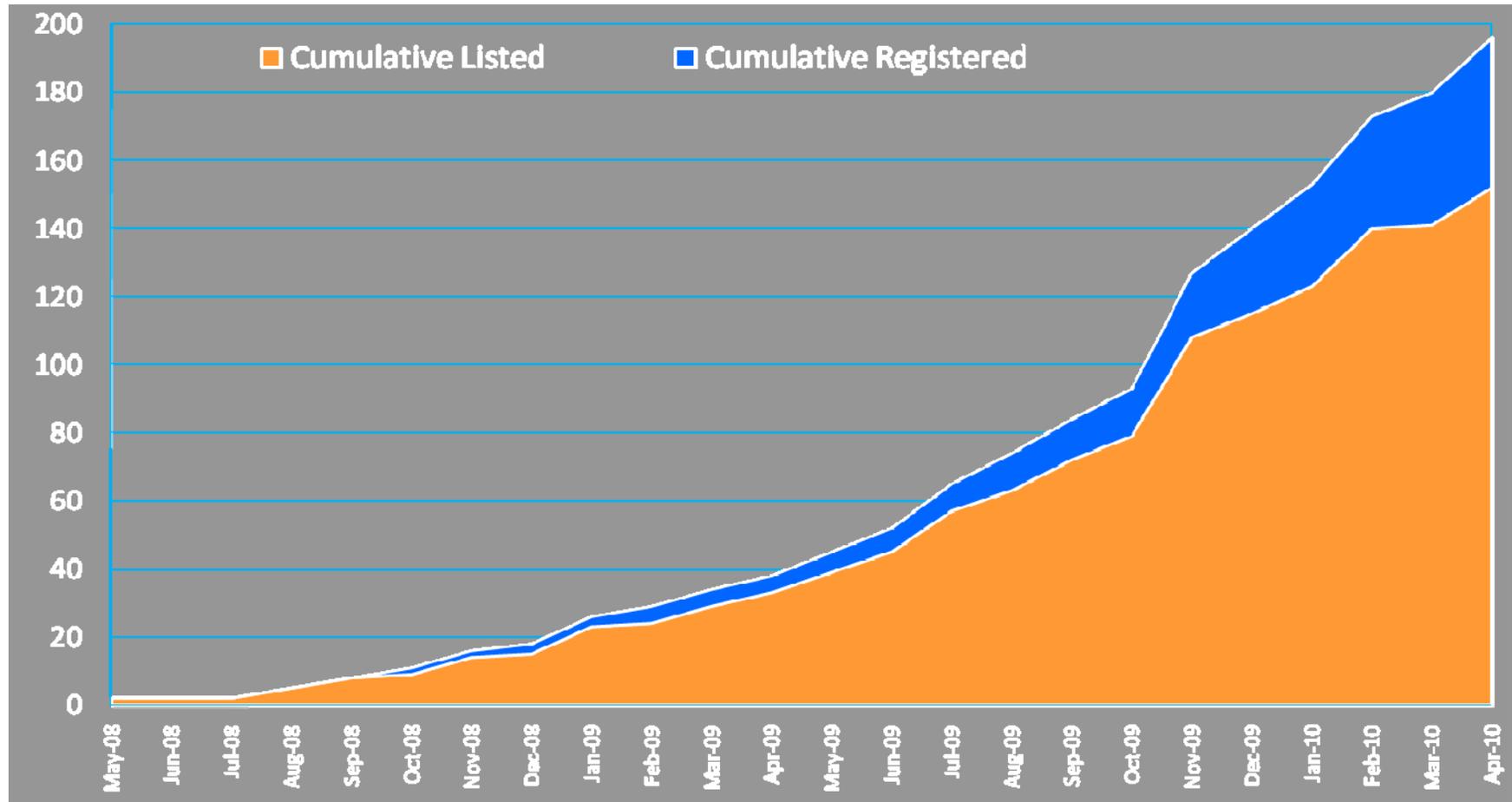
Launch date	June 2008
CRTs registered	~5.3 million
Account holders	325
Projects submitted	355
Exchanges	CRT futures are traded on: <ul style="list-style-type: none">•Chicago Climate Futures Exchange (CCFE)•Green Exchange
Recent prices	\$5-8 per CRT (\$/tCO₂e)

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Listed & Registered Projects



Offset Projects in the CAR



Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Offset Protocol Development

- The Reserve is a “Top Down” Program
 - Staff (with input from Board) select protocols to develop
- Criteria for Selecting Project Types
 - State of science / quantifiability
 - Amenability to standardized baselines & additionality tests
 - Data availability
 - Presence of existing methodologies
 - Total emissions reduction potential (outside of proposed caps)
 - Direct emission reductions (or clear ownership)
 - Significant positive (or negative) secondary impacts
- Protocols Developed with Broad Public Input
 - Multi-stakeholder workgroup
 - Drafts prepared by CAR staff

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Utilizes Standardized Additionality

- **Goal:** Establish eligibility criteria such that additional projects will qualify, but non-additional projects won't
- No project-specific assessments (e.g., barriers analysis, investment analysis)
- Typical criteria:
 - Project location
 - Start date
 - Exceeds legal requirements
 - Exceeds performance standard (or “common practice”)
 - Other criteria as appropriate

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

Rationale for Standardized Additionality

- Less subjective determinations of additionality and eligibility
- Avoid case-by-case review of monitoring & verification methods
- More certainty in amount of credits
- Lower risk for developers and investors
- Faster project processing

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Approach to Leakage

- All protocols define a comprehensive “GHG Assessment Boundary” that incorporates sources of leakage
- Leakage must be accounted for where it is potentially significant
- Accounting methods depend on project type and source(s) of leakage, but methods are generally standardized
 - E.g., Standard leakage rates are defined for Reserve forest projects that result in reduced harvests (improved forest management) or displacement of other land uses (reforestation, avoided conversion)

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Approach to Permanence

- Forest Project Protocol Version 3.0:
 - Carbon must be **maintained (stored) for 100 years after credit is issued**
 - Project owner is liable for avoidable (intentional) reversals (i.e., net reduction in carbon relative to baseline)
 - Contributions to Reserve-administered “Buffer Pool” required to insure against unavoidable (unintentional) reversals
 - No liability for credit buyers
- Future protocols (e.g., in agriculture sector) may or may not follow the same approach

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

CAR Future Protocol Development

- Organic Waste Composting
- Adaptation of Forest Project Protocol for Mexico
- Adaptation of Existing Protocols for Canada
- U.S. Domestic Agriculture Sector Protocols
 - Soil Carbon Management
 - Nutrient Management (incl. N₂O Fertilizer)
 - Rice Cultivation

Source: Adapted from presentation by Derik Broekoff, Vice President Climate Policy, Climate Action Reserve at EPRI 8th GHG Offsets Workshop, 6/24/10.

Part 6: American Carbon Registry (ACR)



American Carbon Registry

- First U.S. private voluntary GHG registry
 - Founded 1997 by Environmental Defense Fund and Environmental Resources Trust
 - 30 million tons CO₂e issued (total tradable = **24,866,694 MtCO₂**)
- Pioneered a “registry” system of transparent on-line reporting and serialization of verified project-based offsets – now the industry standard
- Joined Winrock International in 2007
 - Founded 1984 as a “public benefit corporation” under AR state law
 - *NGO that works in the U.S. and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources*

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

What ACR Does

- Publish/approve standards, methodologies, tools
 - Public consultation
 - scientific peer review
- Gatekeeper of offset / methodology quality
 - Set standards and certify they have been met
 - Buyers have confidence offset has compliance value, public has confidence environmental benefit is real
- Provide transparent serialized tracking of issuances, transactions, retirements
- Make all documents publicly accessible
- Oversee third-party verification

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

ACR Protocol Development process

- ACR publishes general and sector-specific standards
- Flexibility in methodology choice
 - Use ACR-published methodology
 - Use approved CDM methodology
 - Propose/modify existing methodology
 - Develop new methodology for approval
- Public consultation and anonymous scientific peer review of all standards and methodologies
 - Scientific rigor
 - Transparent process
 - Balance environmental integrity with commercial flexibility
 - Shorter time to market and lower cost

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

ACR Additionality and Baselines

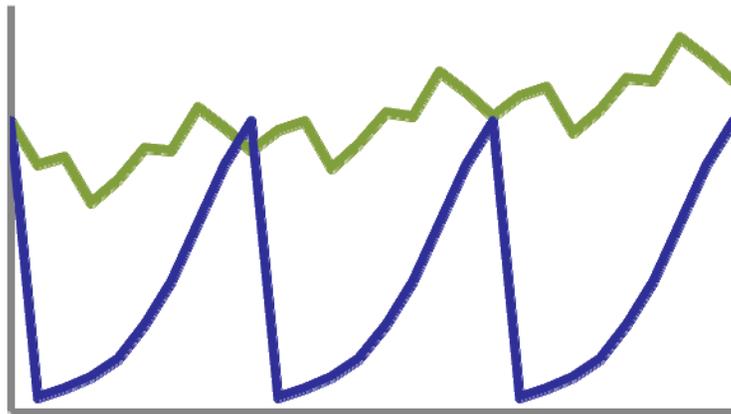
- GHG reductions and removals exceed those that would have occurred under current laws and regulations, current industry practices, and under a business-as-usual scenario
- Two options:
 - Regulatory surplus and exceeds performance standard
 - Three-prong test:
 1. Regulatory surplus
 2. Exceeds common practice for area, industry/sector/forest type, similar landowners
 3. Faces at least one implementation barrier: financial, technological, institutional

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

ACR Baselines and Additionality

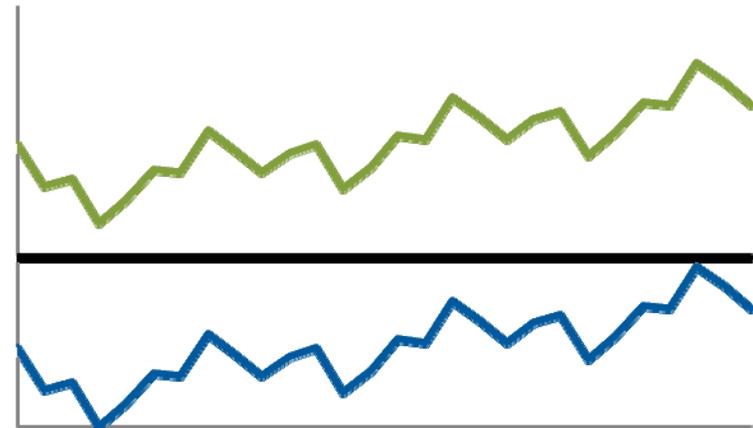
Project-specific

- More subjective, open to gaming
- Less efficient project approval process
- Rigorous tools available
- Less danger of over-crediting



Performance standard

- Less subjective
- Efficient to apply
- Heavy up-front data requirements
- Potential for over-crediting without under-crediting to balance



Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

Permanence Objectives

- Commitment is credible
 - Timeframe meaningful in terms of climate change mitigation
- Market participation is broad
 - Avoid limiting participation; provide flexibility mechanisms
- Risk is manageable for proponent and landowner
 - Treat like insurance
- Offsets are fungible
 - No tCERs, term credits, discounting
 - No assigning liability to buyer/compliance entity
- Atmosphere always “made whole”

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

Permanence, Risk Mitigation and Fungibility

- Minimum **Project Term of 40 years**
 - Ensure project activity maintained, monitored and verified over relevant timeframe
 - Balance time commitment with broad landowner participation
 - Required of Project Proponent only
- Risk assessment and mitigation makes forest offsets effectively permanent and fungible with other offsets, allowances and emission reductions
- Focus on mitigating reversals so atmosphere “made whole”

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

Risk Mitigation Options

- Project-specific risk assessment
- Buffer contribution
 - From project itself
 - ERTs of any other type and vintage
- Unintentional reversal:
 - Proponent pays “deductible”; ACR retires buffer tons for remainder; “premium” goes up
- Intentional reversal (“buy-out option”):
 - Proponent replaces all issued ERTs for that portion of project
- Alternate risk mitigation options accepted
 - Insurance or other financial assurances to replace losses

Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.

ACR Project Types (registered & pipeline)

- Forest carbon: afforestation/reforestation, improved forest management, REDD
- Various agricultural and rangeland activities
- Livestock manure management
- Landfill gas
- CCS / enhanced oil recovery
- Fuel switching
- Industrial gas substitution
- Truck stop idling
- Fugitive methane in oil & gas production, processing, transmission



Source: Adapted from presentation by Nick Martin, Chief Technology Officer, American Carbon Registry at EPRI 8th GHG Offsets Workshop, 6/24/10.



Part 7: Chicago Climate Exchange



CCX Program Overview

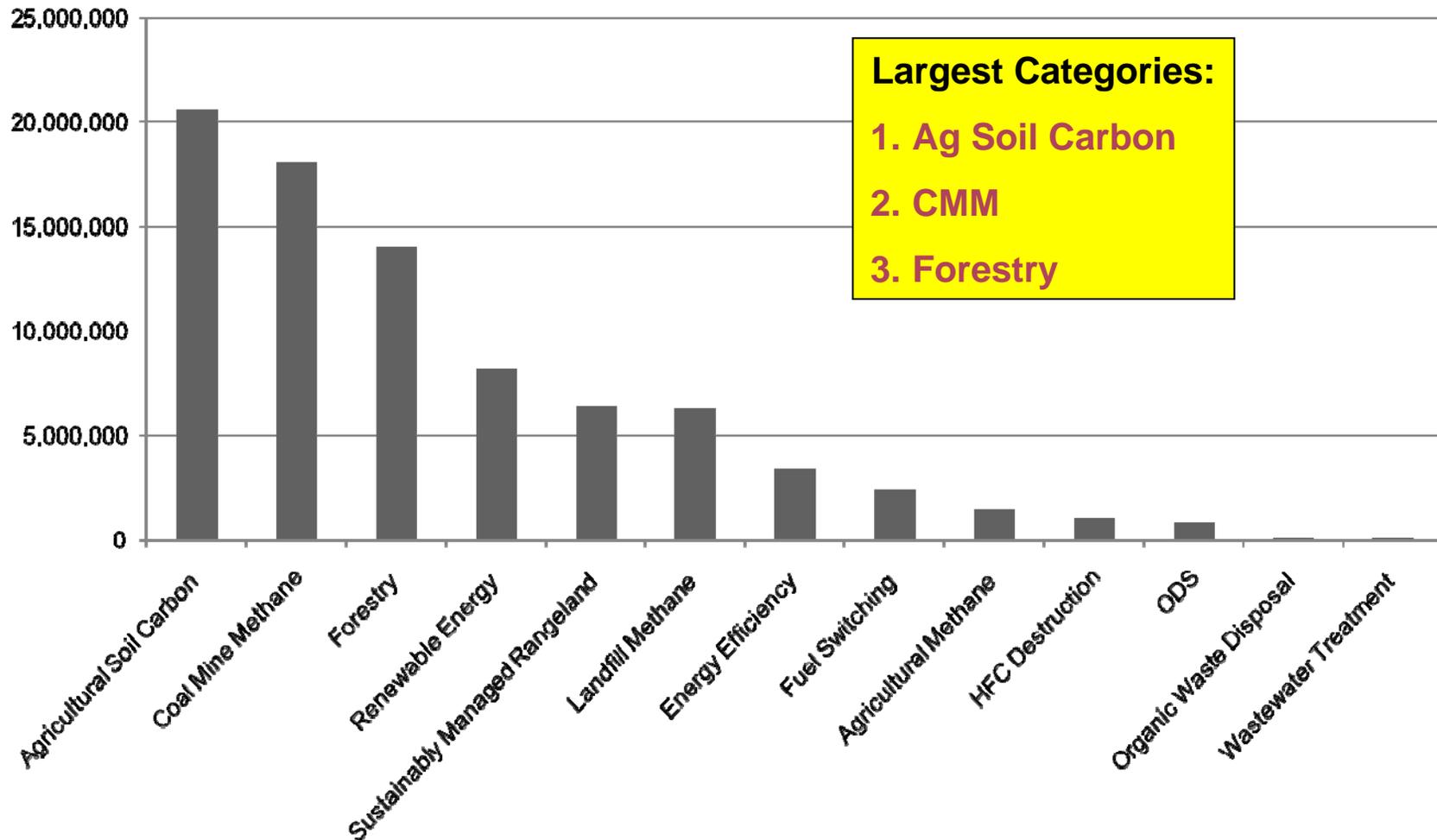
- Voluntary but legally binding cap-and-trade program
 - Launched in 2003
 - Primarily US focused; some international participation
 - Requires 6% reduction from 2000 baseline by end of 2010
 - America's largest offsets program
- Focus on IPCC identified currently viable GHG mitigation options
- Offsets may be purchased by CCX members only
 - May be used to fulfill up to 50% of the compliance obligation
 - Currently account for ~15% of the reductions achieved under the program

Source: Adapted from presentation by Nathan Clark, Managing Director of Emissions Offsets, Chicago Climate Exchange at EPRI 8th GHG Offsets Workshop, 6/24/10.

CCX Offsets Market Size and Scope

- Approximately 82 MtCO₂ registered since 2004
- Registered tons from 13 project types
- 327 registered projects
 - 214 U.S.
 - 86 International (14 countries)
- Approximately 9,000 farmers and foresters enrolled on nearly 16 million acres

Registered Offsets by Type



Source: Adapted from presentation by Nathan Clark, Managing Director of Emissions Offsets, Chicago Climate Exchange at EPRI 8th GHG Offsets Workshop, 6/24/10.

CCX Positive List of Project Types

12 Standardized Protocols

1. Agricultural methane collection and combustion
2. Coalmine methane collection and combustion
3. Landfill methane collection and combustion
4. Avoided emissions from organic waste disposal
5. Continuous conservation tillage
6. Sustainable rangeland soil carbon sequestration
7. Grassland conversion soil carbon sequestration
8. Afforestation and reforestation
9. Sustainable forest management
10. Small-scale renewable biogas
11. Renewable energy
12. Ozone depleting substance destruction

Source: Adapted from presentation by Nathan Clark, Managing Director of Emissions Offsets, Chicago Climate Exchange at EPRI 8th GHG Offsets Workshop, 6/24/10.

CCX Protocol Development

- Protocols are developed by CCX staff with the assistance of technical advisory committees or may be submitted by an outside party.
- Technical advisory committees consist of experts from academia, government, NGO's, industry, etc.
- All protocols must be approved by the CCX Offsets or Forestry committee prior to implementation.
- Public input is solicited, but it is not clear how this input is used in the protocol development process

Additionality and Baseline Determinations

- Standardized **additionality** screens specified by project type
- **Regulatory surplus** - must demonstrate they are not required by law- federal, local or other.
- Must demonstrate they are **not common practice** in the industry/sector.
- Baseline quantification and monitoring requirements are standardized and predefined for each project category

Source: Adapted from presentation by Nathan Clark, Managing Director of Emissions Offsets, Chicago Climate Exchange at EPRI 8th GHG Offsets Workshop, 6/24/10.

CCX Validation and Verification Procedures

- CCX staff evaluate projects and provide preliminary eligibility determination
- All projects must hire an ANSI accredited, CCX approved, independent verifier to conduct annual verification.
- Protocols provide standardized verification requirements
- Verification reports are submitted to CCX for initial review.
- After CCX review, reports are sent to a designated regulatory service provider for Quality Assurance review.

Source: Adapted from presentation by Nathan Clark, Managing Director of Emissions Offsets, Chicago Climate Exchange at EPRI 8th GHG Offsets Workshop, 6/24/10.

Comparison of Major Offset Programs

Key Insights

- GHG offsets must be real, additional, permanent, measurable and verifiable.
- Today there are a number of key voluntary and compliance-based offset programs operating in the US and internationally.
- The CDM is the international standard against which other offsets generally are compared.
- Most parties believe some “early action” offsets will qualify under a future compliance program; each of the voluntary programs discussed today may ultimately qualify.
- These voluntary programs all try to address similar policy challenges, but do so in different ways. Some key differences are:
 1. Methodology development
 2. Additionality and baselines
 3. Measurement, Reporting and Verification (MRV)
 4. Permanence & Leakage
 5. Registration / Issuance processes



Thank You for Participating

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