



Existing Barriers to Offsets Project & Market Development and Potential Approaches to Overcome Them

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- U.S. non-profit “501(c)(3)” scientific research consortium founded 1973 to perform objective electricity research for the public benefit.
- EPRI has 450+ participants in more than 40 countries around the world. In the U.S., EPRI participants generate more than 90% of electricity delivered.
- Principal locations — Palo Alto, CA, Charlotte, NC and Knoxville, TN

Today's Discussion

1. Basic elements of offsets
2. Barriers to large-scale offset development
3. Alternatives approaches to overcome barriers to large-scale offset development



Part 1

Offset Basics



What are GHG Offsets?



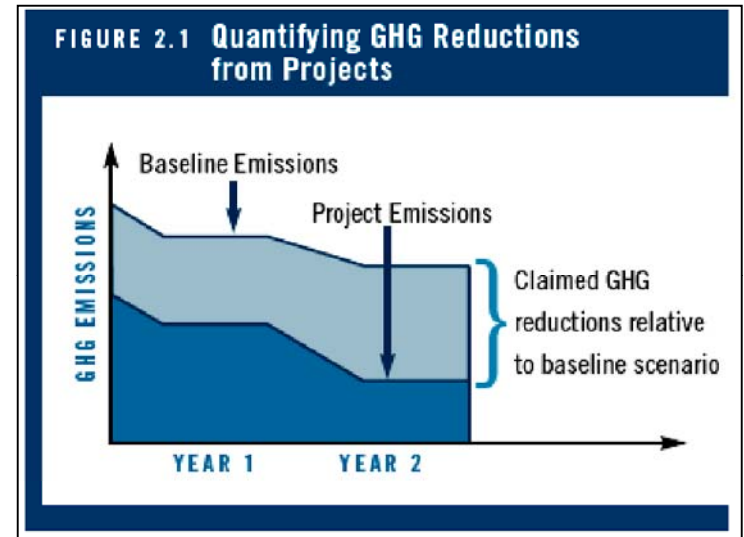
- “Credits” for GHG emissions reductions that occur in sectors or geographic regions **outside** of an emissions cap
- GHG emissions reductions must be
 - *Real*
 - *Additional*
 - *Permanent*
 - *Measurable*
 - *Verifiable*

What are GHG Offsets?

- Offsets – Difference between “business-as-usual” and residual CO₂ emission

$$\text{Offsets} = \text{Baseline}_{\text{CO}_2} - \text{Project}_{\text{CO}_2}$$

- Existing and evolving offsets programs include . . .
 - “Compliance” programs (e.g., CDM and CA ARB)
 - “Voluntary” programs (e.g., ACR, CAR, VCS)



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 (WBCSD), 2007.

Example GHG Offset Project Types



A coal mine methane destruction facility.



Corn fields in MI that are part of EPRI's N₂O offsets project



Wind farms in China can generate offsets in the CDM



Avoiding deforestation can generate REDD credits

Benefits and Risks of GHG Offsets

Benefits

- **Reduce compliance cost**
- Engage “non-covered” entities in GHG mitigation
- Create economic incentive to develop new GHG reduction technologies and approaches
- Mechanism to “link” global carbon markets

Offsets provide a **“bridge” to a low-carbon future** and time for technology development, demonstration and commercial deployment.

Challenges / Risks

- **Additionality**
- **Baselines**
- **Permanence**
- **Leakage**
- Measurement, monitoring and verification
- Reduced incentives to invest in low-carbon technologies

These challenges can be addressed, but there remains an **inherent tension between perfect “environmental integrity” and need to develop large-scale offsets.**

Institutional Design Differences Among Major Existing Offsets Programs

- Development and approval of offset methodologies
- Methods for determining additionality: “project-based” versus standardized approaches
- Methods to address permanence and leakage
- Use of 3rd parties to validate and verify offsets
- Approaches to project aggregation
- “Buyer” versus “seller” liability for offsets

Part 2

Barriers to Offset Project Development



Three Types of Barriers to Offset Development

1. Limited sectoral eligibility

- Offsets must be developed in sectors and regions outside of GHG emissions caps and must not be required by laws / regulations
- Limits sectors and regions in which offsets can be developed (e.g., agriculture and forestry)

2. Offset project risks can make it difficult to mobilize private capital to develop offset projects

- **Regulatory** risk
- Project **performance / delivery** risks
- Carbon **market price risks**
- **Reversal / Impermanence** risk
- **Liability** risk

3. Complexity and administratively burdensome approach to offset methodology and project development

Key Barriers in the Offset Project Development and Approval Processes

- Methodology development is complex and challenging
- Complex project *validation, registration and verification*
- Additionality can be difficult to apply in practice and is a large source of project regulatory risk
- Methods to address permanence can make it impractical for private landowners to participate
- Approaches to address leakage can result in large discounting of offset credits
- “Project-based” approach is of limited use in sectors that have large, but distributed emission sources / sinks (e.g., agriculture and forestry)
- Approaches to offset project liability

Methodology Development

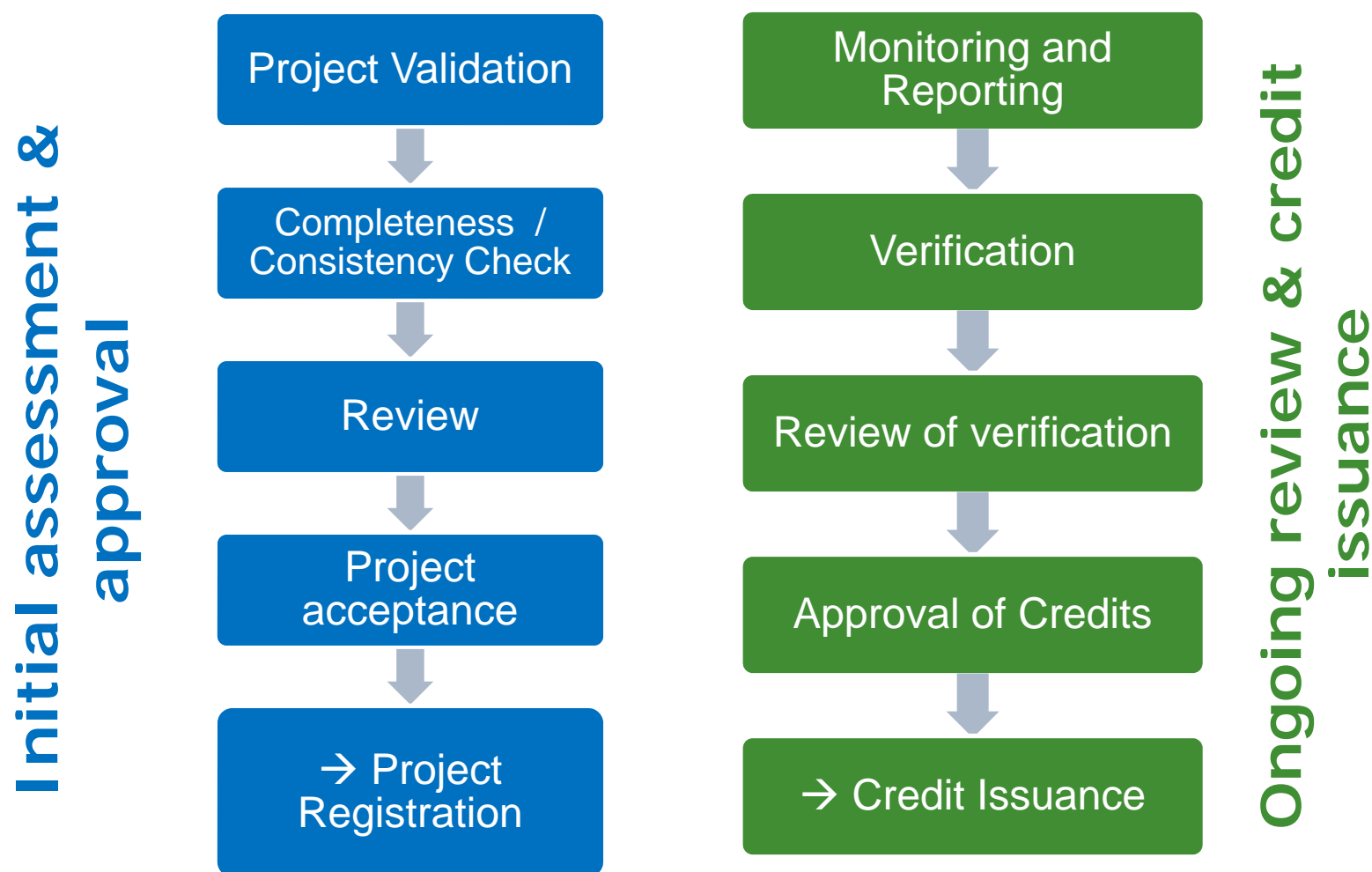
- **Barriers:**

- Developing methodologies requires substantial time, resources and requires highly technical expertise
- Incentive to develop methodologies with narrow scope and applicability to maintain developers “own” value
- Fragmented methodology development can lead to multiple methodologies for the same project type
- Continuous evolution of offset standards may require continuous methodology updates which private parties may not undertake

- **Alternatives:**

- Methodologies developed and maintained by regulatory agencies as part of “compliance” programs
- Adopt a set of approved methodologies “up front” at the time the offset program is launched
- Allow developers and others to submit new methodologies to be validated and adopted by agencies over time

Generic Offsets Development and Issuance Processes



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

Project *Validation, Registration & Verification*

- **Barriers:** Processes can be costly, time consuming and bureaucratic
 - *Validation* is used to show that a proposed project is consistent with an adopted baseline and monitoring methodology
 - *Registration* is the formal way that an offset project becomes eligible to generate emission reductions that can be credited
 - *Verification* is the step in which emission reductions generated by an offset project are quantified and verified
- **Alternatives:**
 - Adopt a simplified project ***listing*** approach to “register” offset projects, and conduct project validation and verification in one step prior to offset issuance
 - Use statistical sampling approaches to monitor and verify projects where possible

Additionality

- **Barrier:** *Project-based* additionality approaches increase like the one used in the CDM is complex, and increases regulatory risk because project developers cannot easily determine if a project is likely to be additional.
- **Alternatives:**
 - Greater reliance on *standardized approaches*, such as performance standards and benchmarks
 - Use a “*positive list*” early in offset program development to identify *a priori* additional project types
 - e.g., American Power Act: Section 734 “Positive List”
 - Do not focus on financial additionality

Permanence

- **Barrier:** Carbon sequestration projects in agriculture and forestry are subject to the potential for CO₂ to be released intentionally or unintentionally.
 - Temporary crediting for A/R projects in the CDM has not worked in practice
 - CAR requirements for 100-year guarantee by forest landowners makes it difficult for private landowners
- **Alternatives:**
 - Use “buffer” accounts to handle unintentional releases
 - Allow proponents to use insurance products, buffer pools or a secure source of offsets as a permanence guarantee
 - Assess permanence across an aggregation of offset projects
 - Adopt a shorter time period to guarantee permanence

Liability

- **Barrier:** “Buyer / user” liability is likely to make it very difficult for a large, liquid market for offset credits to evolve
 - Offset credits are not fungible with one another
 - Buyers have to complete due diligence on every offset project / credit before agreeing to buy offsets
 - Buyers cannot buy mixed “tranches” of offsets in the marketplace because these will include offsets from different projects
 - Financial players that provide liquidity cannot develop contracts and easily buy and sell offsets
 - May confer market power to large offset buyers who can dictate terms
- **Alternatives:**
 - “Seller” liability approach whereby project developers are liable
 - “Jurisdictional” liability for offsets that have been properly issued and used for compliance

Potential Ways to Reduce Uncertainty and Delays in Future Offsets Programs

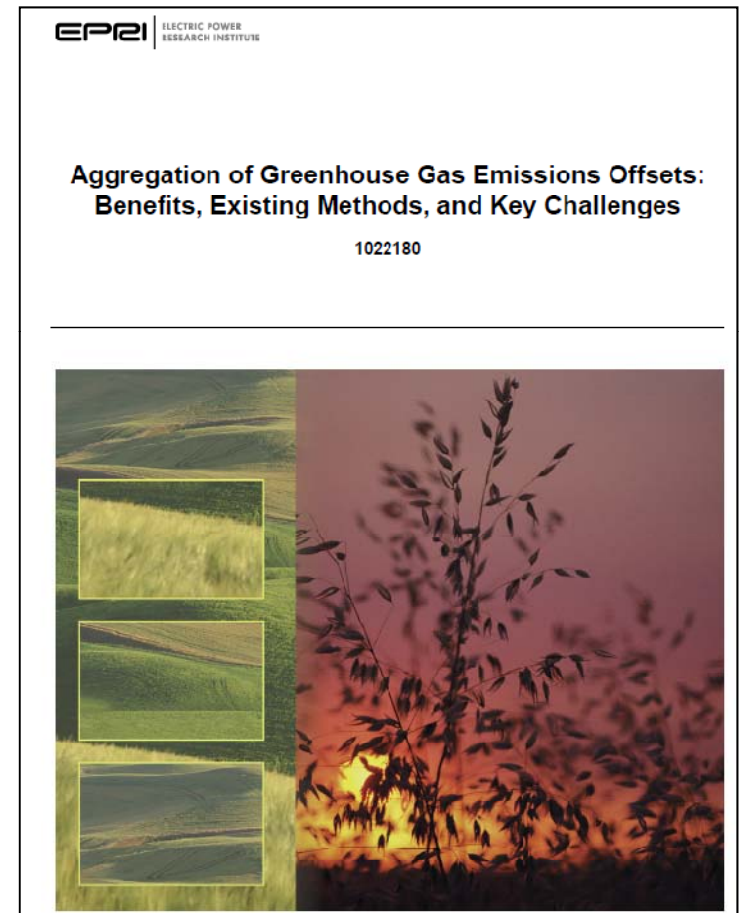
- Consistency and stability in administrative roles and procedures
- Transparent and consistent decisions; avoid retroactive decisions
- Use standardized methodologies, additionality tests, and baselines
- Use a “listing” approach rather than full project “validation”
- Hybrid approach to new methodologies starting with a “positive” list
- Create more confidence in the system of third-party verification
- Provide sufficient resources and expertise
- Address impermanence with buffer reserves not temporary credits
- Create a secure, well-designed registry for offset credits
- Reduce complexity for project developers wherever possible
- Consider determining leakage on a regional basis.

An Idea to Consider – Jurisdictional Offsets

- Jurisdictions identify a set of approved offset practices (e.g., reforestation, reduced N fertilizer use, etc...)
- Jurisdictions award offset credits directly to farmers and foresters who adopt approved practices
 - Crediting rates determined on a regional basis
 - Crediting rates adjusted over time to account for under / over crediting as monitoring data is collected over time
- Farmers and foresters sell credits to compliance buyers, aggregators and financial institutions
- Leakage and permanence to be assessed on a regional level by regulators
 - Future crediting adjusted to account for past leakage
 - Future crediting adjusted to account for unintentional reversals

Key EPRI Offsets Documents

- **Aggregation of Greenhouse Gas Emissions Offsets: Benefits, Existing Methods, and Key Challenges.**
EPRI document #1022180 (2011).
- Emissions Offsets: **The Key Role of Greenhouse Gas Emissions Offsets in a U.S. Greenhouse Gas Cap-and-Trade Program.** EPRI document #1019910 (2010).
- Key Issues in **Designing Mechanisms to Reduce Greenhouse Gas Emissions from Deforestation and Degradation (REDD).** EPRI document #1017998 (2009).
- The EPRI Greenhouse Gas Emissions Offset Policy Dialogue: **Description of Key Issues in the Design of GHG Emissions Offset Programs.**
EPRI document #1015633 (2008)
- **“A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions.”**
EPRI document #1014085 (2007).





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

EPRI 2011 Offset “White Papers”

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Designing a Large-Scale Federal Greenhouse Gas
Offsets Program in the United States: Policy Choices
and Lessons Learned from the Clean Development
Mechanism and Other Offsets Programs

November 2011




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Case Studies of Greenhouse Gas Emissions
Offset Projects Implemented in the United
Nations Clean Development Mechanism

Learning by Doing and Implications for a Future United States Offsets Program

December 2011



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EPRI's global climate research provides public- and private-sector decision makers and other stakeholders with analysis and information on potential costs and benefits of domestic and international climate policy proposals. The research also identifies potential options and corporate strategies for complying with GHG emission reduction requirements.

EPRI's climate research is comprised of two programs:

- [Global Climate Policy Costs and Benefits](#) (PDF 88 KB)
- [Greenhouse Gas Reduction Options](#) (PDF 90 KB)

Research Highlights

EPRI Continues GHG Offset Policy Dialogue with Exploration of Opportunities to Create Nitrous Oxide (N₂O) Emission Reductions in U.S. Agriculture

Representatives from the policymaking, environmental, industrial, financial, agriculture and research communities gathered in Washington, D.C. for EPRI's most recent greenhouse gas (GHG) emissions offsets workshop. The 11th workshop held on Nov. 4, 2011 explored the potential to reduce GHG emissions by improving nitrogen fertilizer management in U.S. agricultural crop production to reduce nitrous oxide (N₂O) emissions (aka "nutrient management"). For more information, contact [Adam Diamant](#), (510) 260-9105.

- [Workshop #11 Background Paper: Background Paper: Creating Nitrous Oxide \(N₂O\) Emissions Offsets in Agricultural Crop Production in the United States](#) (956 KB)
- [View All of the Expert Presentations](#)

EPRI Publishes New Report on the "Aggregation of Greenhouse Gas Emissions Offsets: Benefits, Existing Methods and Key Challenges."

This EPRI report designed to develop and disseminate a set of lessons learned about the aggregation of individual greenhouse gas (GHG) emissions offset projects into larger, organized configurations that can yield

GHG Offset Policy Dialogue

The policy dialogue is an ongoing forum to discuss offset policies and implications for the electric power industry.

[EPRI's GHG Offset Policy Dialogue](#) explores key topics and program designs.

Links to EPRI Sponsored Research

- [MIT Joint Program on the Science and Policy of Global Change](#)
- [Joint Global Change Research Institute \(JGCRI\)](#)



Thank You

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