

# PolicyInteractive Carbon Offset Working Paper (#1 short version)

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*Public awareness of the threat of climate change has risen sharply in the last couple of years and an increasing number of businesses, organizations and individuals are looking to minimize their impact on the climate. To effectively address the threat of climate change, we need comprehensive and stringent policies to reduce greenhouse gas (GHG) emissions at national and international levels. At the same time, voluntary individual and corporate climate action can be essential for creating the public awareness and constituency needed for policy change. (Kollmus 2008)*

## I. Background

A failure of comprehensive U.S. or international policy on climate change and a growing sense of urgency is motivating proactive local jurisdictions to take action. This working paper was developed with the City of Eugene and the University of Oregon in mind although the principles observed here may be widely implied. Carbon offsets is one action tool available to mitigate carbon emissions. In July of 2014, the City of Eugene passed an ordinance establishing a legal obligation for city operations and facilities to be carbon neutral by 2020. This City policy intends that up to fifty percent of carbon neutrality may come from carbon offsets. Yet, offsets are contentious, in part because some perceive that it allows unsustainable emissions to excused by buying indulgences or simply outright fraud. However, the practice of carbon offsetting has matured recently even though the extant descriptive literature is rather dated. This paper is intended briefly introduce and update the reader on the terminology and issues involved. A somewhat more detailed PolicyInteractive working paper about carbon offsets is available here: [PI Offsets Working Paper #2](#). For a more comprehensive look at offsets, a 117 page paper by researchers for the [World Wildlife Fund](#) (Kollmus 2008) is recommended.

This paper is structured to briefly cover these topics:

1. What is a carbon offset;
2. Common criteria for a valid carbon offset;
3. Quality control and validation mechanisms;
4. “Additionality” contentiousness;
5. The desire for and implications of local projects rather than distant projects;
6. Co-benefits: where offsets deliver more than carbon reduction;
7. Jurisdictional partnering for offset purchases ; and
8. The common pros and cons of carbon offsets.

### 1. What is a carbon offset?

- a. A carbon offset a neutralizing action to compensate for undesirable greenhouse gas (GHG) emission behavior. In practice, an offset is generally purchased by a GHG emitter from an offset vendor, who delivers validated carbon reduction strategies. The vender generally brokers offsets from developers of the offsets.
- b. Institutional scaling is generally necessary because the tiers of checks and balances and economies of scale viable and worthwhile.
- c. The common offset measurement “unit” is one metric ton (Mt) of emissions of carbon dioxide equivalency (CO<sub>2</sub>e) neutralized by one Mt of CO<sub>2</sub>e sequestered or avoided elsewhere.
- d. Offset strategies typically include: energy efficiency, renewable energy substitution of fossil fuel, terrestrial or agricultural methane capture, soil and forestry carbon retention, and reduction of ozone depleting substances.

- e. Offset participants, at varying levels of involvement, can include: project owner, vendor, developer and funders; standards of practice organization(s), auditor or “validators”, wholesale brokers, retail traders, final buyer, and other public interest stakeholders seeking transparent and honest delivery.
- f. Some developers or vendors internalize quality control validation. This introduces potential conflicts of interest.
- g. In 2013, certified offset wholesale prices were quoted near one dollar per unit but more commonly ranged from five to fifteen dollars per unit (personal conversation with Val Fishman, Bonneville Environmental Foundation). Pricing varies depending on size of purchase, specifications of the purchaser, and demand for available projects. 2014 pricing is being influenced by diminished market demand stemming from unmet regulatory expectations. Price volatility occurs due various market forces.
- h. The term “offset” typically refers to the voluntary carbon market whereas “credit” refers to the legally mandated market; otherwise the broad objectives are the same.

## 2. What are the most common criteria for a valid carbon offset?

- a. A baseline emission inventory is generally necessary to establish quantification benchmarks.
- b. Offsets must conform to quality standards which are verified by independent third-party auditors.
- c. Offset projects are “real” and emissions reductions are “additional.”
  - “Real” addresses concerns that bogus carbon reductions are falsely claimed.
  - “Additional” means that the offset would not otherwise occur without the offset purchase. Additionality sometimes involves debatable assumptions or outcomes (more detail in topic #4).
- d. Offset projects are assigned ownership, and are registered and transparent to all relevant parties.
- e. An offset unit or credit purchase cannot be double counted, e.g. sold more than once, once purchased is retired, monitored through universally verifiable certification on project by project basis.
- f. Emissions from both the originating source and the offset itself is measurable, , and at minimum obtain at least one to one offset equivalency.
- g. Offset projects account for leakage, e.g. external impacts such as rebound or distant repercussions.
- h. Offsets with life spans are monitored to insure continued performance.
- i. Emissions reductions are permanent. The definition of permanence is sometimes contentious and depends on project performance lifecycle, such as 50 years. Others capture carbon equivalency permanently.
- j. Offsets with high potential for adverse impacts are not permitted.

## 3. Standards, Auditing and Verification:

- a. Standards have been established by several institutional entities such as the Kyoto Protocol [Clean Development Mechanism](#) (CDM) and the [American National Standards Institute](#). Standards are updated as science progresses.
- b. Different standards have been designed for different types of projects, a topic exceeding the brevity of this discussion.
- c. Third-party auditors apply the standards to verify compliance.
- d. Depending on project specifications, offset purchasers generally have some discretion on which standard and auditor to use. Five leading providers of standards (below) and/or audits have much in common, but also differ in how they provide service depending on their internal policies and the specifications of the purchaser.
  - 1) [The Verified Carbon Standard](#) (VCS)
  - 2) [The Gold Standard](#) (GS)
  - 3) [The Clean Development Mechanism](#) (CDM)
  - 4) [The Climate Action Reserve](#) (CAR)
  - 5) [The American Carbon Registry](#) (ACR)
- e. Verification, audit and registry carry economic costs. Small entities and/or small project players could contain verification costs by internalizing standards and verification, yet this increases conflicts of interest and credibility

risks. Furthermore, large project providers generally obtain economies of scale, which lower the unit cost of validation and monitoring.

- f. Validation processes and auditors are often paid for by project developer(s) which creates conflicts of interest because of auditor motive to foster an ongoing fiscal relationship. Some standards resolve this through a third-party board review and approval process. Validation processes continue to evolve.

4. **Additionality:** Carbon offset standards aim to ensure that “[...] reductions in emissions [which] are additional to any that would occur in the absence of the certified project activity” (Kyoto Protocol, Article 12.5). Quality assurance asks whether the offset project’s feasibility depend in-part on the buyer’s participation. Additionality is often based on unprovable hypothetical assumptions because it is impossible to always know if a project would not have proceeded without an offset buyer’s investment. For example, when would rising fuel price trigger an otherwise unprofitable methane capture project, since offset purchase funds the marginal costs between unprofitable and profitable investments? Projects mandated by law cannot be “additional”. A variety of specific tests for additionality are applied depending on the type of project. Contention has been stirred by publicized research accounts of projects likely to have been completed without offset financial support.

5. **Co-benefits:** Offset projects often deliver benefits beyond carbon reductions or neutrality. These commonly include: reduced reliance on fossil fuels, habitat conservation, biodiversity protection, job creation, water quality improvement, and improved local air quality. The CDM criteria aim for co-benefits improving resiliency and sustainability for marginalized populations. Measurement of co-benefits tends to add more complexity to the already difficult issues validating offsets; consequently VCS, the largest provider of offsets decided in 2010 to focus exclusively on the carbon related metrics, dispensing with the complications of measuring co-benefits.<sup>1</sup> Measurement difficulties aside, economic value of co-benefits has been computed by one study to exceed the cost of the carbon offsets themselves. Committed jurisdictions therefore have a motivation to include co-benefits in quantifying outcomes to buttress public support. Measurement of co-benefits could therefore become a policy question for jurisdictions in addition to carbon reduction/neutrality objectives.

6. **Local vs. distant or foreign projects:** Local (Eugene) stakeholders have expressed strong preference for local offset projects. The primary rationale seems to be that dedicating public funds for offsets will gain stronger support when projects are tangibly observable, yield local employment and co-benefits like water quality and energy efficiency, which are seen and felt locally. Distant projects are also disfavored when personal unfamiliarity increases fear of fraud or non-permanence due to things like regime change or lack of support by remote project stakeholder citizens. Nonetheless, while local projects have intuitive appeal, they should be weighed against benefits of non-local projects. [The Clean Development Mechanism](#) (CDM) initially envisioned offsets to address large imbalances of wealth and technological capacity between developed and developing economies. Considering that developed economies have already contributed most of the offending GHG emissions, yet wish to preserve their economic privileges, the CDM favored offset investments as a mechanism for increasing fairness between emitting countries and those most vulnerable to GHG emissions. Rapid growth in emerging economies which often lack the environmental standards of developed countries can yield large scale project carbon reductions at economical costs. In this circumstance, a combination of cultural equitability and economical one-to-one validated non-local offset projects can be seen as advantageous. Local policymakers could be faced with a question of how much premium local projects are worth when the driving policy goal is carbon neutrality. Outside of purchasing very distant offsets, local policymakers might also consider projects in neighboring regions that are occasionally hostile to sustainable climate and energy policy – i.e. rural communities hard hit by declining timber harvests.

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<sup>1</sup> Lovell. *Governing the carbon offset market*, at 359.

7. **Jurisdictional partnering on local projects:** Local projects tend to be comparatively small, and thus have economy of scale problems which include third party verification costs. This can stimulate interest in multi-local jurisdictional projects. Project examples might be forest carbon sequestration in the McKenzie watershed offering co-benefits of clean water, biodiversity, clean water and view-shed protections or a bio-digester using agricultural or paper-making waste to generate electricity, offsetting decomposition methane byproduct yielding co-benefits of odor reduction, jobs and biomass electricity. Such projects might appeal to multiple jurisdictions that otherwise could not afford to engage a project alone. Countervailing logic may find burdens of dissimilar economic horizons, policy dissimilarities, negotiation demands or other incompatibilities. The Eugene ordinance commitment could solidify the impetus for discussion among parties about commitment to joint offset ventures. Such discussion should include validity and verification goals.

8. **The common pros and cons of offsets**

**Pros:**

- a) Incorporating externality pricing through offsets increases economic motive to reduce emissions.
- b) A direct offset of emissions is achieved when offsets are valid and permanent.
- c) Pricing emissions prepares for future regulatory measures from state and federal entities.
- d) Leadership credibility is obtained due to public impatience with lack of climate policy response.
- e) Early adopters gain leadership recognition and provide examples for followers.
- f) Investment capital is raised for carbon reduction investments that would otherwise not be feasible.
- g) Early offset investments may access low hanging fruit at lower cost, while prices may rise as lower cost projects are fully exploited.
- h) Co-benefits unassociated with emissions can be acquired which may otherwise not occur without offset funding.

**Cons:**

- a) Offset credibility, and that of the jurisdiction, suffers when a project is demonstrably unnecessary with offset funding (the additionality violation).
- b) Offsets act as an excuse to delay inevitability of much lower carbon behaviors.
- c) Offset investments can cause emission rebound effects from investment repercussions (a leakage violation) such as where energy savings are spent on subsequent emission producing activities.
- d) Proprietary offset providers may prevent transparency, yielding suspicion and distrust (a reporting violation).
- e) Offset markets have pricing volatility, yielding unpredictable budgeting challenges.
- f) Offset “permanence” is sometimes ambiguous and arguable, contributing to public distrust of the potentially harder but more lasting value of genuine operational carbon reduction.

9. **Conclusion:** Given the complexity of carbon markets and the rapidly evolving interplay of emission reduction policies at different institutional levels, some uncertainties are bound to arise. Some critics of offsets hold nothing short of cold-turkey user emissions reductions are legitimate stir additional doubts. Despite these issues, credible scientific research suggests there is a short time frame available to achieve meaningful emission reductions and thus preserve a habitable climate for current and future generations. We believe carbon offsets, yet imperfect, hold sufficient credibility and genuine delivery to be included in jurisdictional policy and behavioral choice structures. Offsets may not be perfect but at this time other options are sufficiently limited to justify offset inclusion alongside efforts to improve their performance.

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An expanded discussion of offsets are available: [PI Offsets Working Paper #2](#)