

Think Globally, Innovate Locally:

Offsets and the Risks of Outsourcing Climate Action

David Roland-Holst[†]

UC Berkeley

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As the world awakens to the reality of climate change, policy makers are scrambling to reconcile the need to reduce global warming pollution with traditional economic priorities such as growth, employment, and technological progress. Fortunately, a growing body of research suggests a way forward, though the challenges are enormous: transitioning to a low-carbon future without having to sacrifice living standards will require path-breaking commitments to innovation. The opportunities this presents are just as significant as the challenges, and the rewards may rival those of history's most robust industrial and technological booms.

Rising global warming pollution has drawn California, the world's eighth largest economy, into an unprecedented policy dialogue that will influence energy and environmental decisions around the world. Among many other climate action initiatives, pollution offsets are being intensively discussed—particularly in the context of market-based incentive schemes like carbon trading—yet their full implications for the state are only partially understood. Some industry stakeholders strenuously advocate offsets because they can reduce short-term adjustment costs. To achieve a balanced appraisal of this approach, outsourcing climate action, more evidence is needed. At this critical moment of policy debate, we all need to better understand the benefits and costs of offsets.

My research on the economic effects of AB 32 suggests that California will achieve higher growth and more widespread employment benefits if climate policies induce innovation, building on the state's long history of improvements in energy efficiency. Thanks to a generation of stringent regulatory standards, California's per-capita electricity consumption is 40 percent below the national average. The resulting energy savings have exceeded the capacity of 24 traditional coal-fired power plants and represented \$56 billion dollars of household income. The power plants were never built, and the household savings went on to create about 1.3 million new jobs and \$40 billion in new payrolls. Offsets, by contrast, would outsource both efficiency gains and their many downstream benefits. California has the innovation capacity to capture these benefits for its own economy.

[†] Department of Agricultural and Resource Economics, University of California, Berkeley. This policy brief was written at the request of the Union of Concerned Scientists. Opinions expressed here are those of the author and should not be attributed to affiliated institutions. Contact: dwrh@berkeley.edu

Short Term Challenges, Long Term Opportunities

Because the dispersion of global warming pollutants is a worldwide phenomenon, there is in principle no reason not to “recognize”—that is, account for—mitigation wherever it occurs. Indeed, many advocates of offsets argue that mitigation can be achieved at lower cost outside the geographic boundaries of the trading scheme (e.g., outside California) and that climate risk can thus be reduced more efficiently with offsets. For example, a U.S. company might invest in, sell, or give a more efficient power plant to a Chinese counterpart in exchange for some contractual arrangement specifying that the transaction results in lower global warming pollution than would otherwise have been emitted. These contracted reductions would then be credited to the U.S. investor. Although there are extra transactions expenses, such a deal could reduce global warming pollution at lower cost than that of inventing and adopting entirely new technology at home.

Countering this simple intuition are many uncertainties—including the challenges of measurement, verification, and “additionality” (defined below)—as well as environmental and economic objections. From an environmental perspective, offsets forsake the opportunity to reduce local pollution, which often is toxic and represents substantive local public health risk and environmental damage. The costs of such effects and, just as important, the benefits of local mitigation, are not usually considered in the global efficiency argument. They need to be estimated and included, however, if local stakeholders are to fairly compare offsets with in-state global warming pollution reductions.

Offsets also forsake the opportunity for innovation, and for higher-income technology-intensive economies like California this may be their most serious drawback. The primary drivers of the state’s superior growth experience over recent decades have been education and innovation, which together have made the state a knowledge-intensive leader in the global economy. First in information and communication technology (ICT), then in biotech, California’s R&D supply chain has delivered solutions for the most dynamic and profitable sectors of modern times. And now the Next Big Thing has arrived, as is apparent from the venture community’s rapid initiatives to capture the opportunities it presents.

New Markets Will Belong to Innovators

That Next Big Thing is efficient and clean energy use; today’s innovators in this field will be tomorrow’s new technology barons.¹ Because energy consumption accounts for over 80 percent of CO₂ emissions, energy efficiency is a cornerstone of climate action. By revenue, energy is also the world’s largest industry. Because this product so pervades the modern economy, efficiency can do for energy what ICT did for management and logistics—deliver innovation that revolutionizes traditional practices around the world.

¹ Clean and green technologies are the most rapidly growing segment of new-venture investment, totaling several billion dollars annually in California alone.

Such innovation will save money in the production of every single modern good and service; and in an era of escalating energy prices, demand for efficiency would grow robustly over the coming decades even *without* climate action. These considerations, together with the additional demand induced by local environmental regulation, will create an enormous global market in new energy-use technologies that range from compact fluorescent light bulbs to hybrid vehicles.

These markets will be dominated by innovators, not those who defer innovation. While it is a laudable goal to reduce pollution in poor countries, doing so with today's technology merely substitutes short-term solutions elsewhere for long-term solutions and opportunities both at home and in rapidly emerging global technology markets. For example, even though the U.S. electric power systems are more efficient than those of many other countries, they remain far less efficient than they need to be in order to meet our long-term needs for decarbonization.

Meanwhile, the so-called "additionality" problem is a serious conundrum for offset advocates. Simply put, how do we know that an investment we make in lower pollution elsewhere would not have been made anyway—especially in dynamic emerging markets, where spontaneous rates of innovation and technology adoption are very high? Such an investment would not only be a false economy but also would imply significant opportunity costs. China, for example, is facing some of the world's fastest-growing energy prices, as domestic fuel subsidies have become unsustainable and the country has moved, in a single decade, from being a small net exporter of oil to the world's second-largest importer. These price pressures will do much more to stimulate long-term energy efficiency than a short-term opportunity to export pollution rights. Consider that China, which was once the ultimate labor-intensive economy, is today the fastest-growing market for industrial robotics. Why? Even the most expensive technologies become profitable in the face of rising wages and the desire for higher product quality. In much the same way, rising energy prices and a rapidly increasing public desire for environmental quality will drive emerging markets toward pollution mitigation.

Other challenges related to offsets arise from unwelcome secondary effects that are socioeconomic in nature. For example, if we pay for environmental mitigation in fast-growing economies, what incentive do they have to establish and maintain their own standards? What happens when offsets arouse conflict between home and overseas regulatory regimes or complicate salient social issues (such as labor standards, biofuel-food tradeoffs, or biodiversity)? Clearly, offsets can lead to a host of new and difficult policy challenges.

Offsets can also dispel the momentum of climate action into profit making by middlemen marketing uncertain projects and financial instruments. By putting a price on carbon, mechanisms like cap and trade share the burden of adjustment, using markets to identify real efficiency and reward innovation. Creating a market for surrogate pollution reduction invites intermediaries to package emerging market technology adoption and sell it to more affluent bidders. Like the current mortgage

securitization mess, contracting for far-away emission cuts creates uncertain agency relationships that increase transactions costs and risk. These schemes create real profit for matchmakers, but information and incentive problems multiply as the principals become farther and farther removed from each another. Verifiability, enforceability, and sustainability of such contracts all become more tenuous across space and time, and the short-term cost advantage and efficacy of offsets decline accordingly.

Finally, we need to recognize that offsets forsake opportunities to reduce long-term energy costs by leaving us vulnerable to ever-rising energy prices. Rapidly emerging economies might be happy to accept our technology while we defer innovation, but they will not pay our energy bills. As the costs of electricity, gasoline, and all the goods that use them continue to escalate, we pay more for every day we drag our feet on improving energy efficiency at home.

Outsourcing climate action through offsets ultimately outsources innovation and its rewards. Energy technology should take its rightful place among California's knowledge-intensive industries, establishing new global standards at home for climate security and sustained prosperity. California should say no to offsets and accept the challenge to innovate.