[This is the sixth post in a series expressing my view of why California's actions on climate change are so important and how they will change the world. The introductory post provides an overview and some general context.]

Roughly 80% of California land is protected or agricultural. That includes deserts, forests, wetlands, foothills, and multiple vegetative types, as well as farms, dairies, and ranches. While an exact inventory of emissions from working and natural lands is difficult, California has determined that those lands are a source of GHG emissions rather than a sink. The reasons for that vary, but are primarily four: forest fires, agricultural practices, loss of sequestration capacity of soils, and conversion of land to development.

Determining a baseline for GHG emissions for working and natural lands is challenging but essential. A number of protocols exist, including one adopted by the UN's Intergovernmental Panel on Climate Change, but none of them are yet sufficiently accurate. California is working with Lawrence Berkeley Labs and others to refine the baseline calculation. In addition, data and satellite companies are working on remote emission calculations, which, if reliable, could change how land-based emissions are evaluated. California's refined approach will be available in 2018.

It is also essential that working and natural lands become sinks rather than sources. So, we need a refined approach to forests and forest fire, including prescribed burns and thinning of underbrush. We need new strategies to improving the health of soil and the ability of soil to sequester carbon and water. We need adoption of multiple "carbon farming" techniques. And we need to protect agricultural and natural lands from development. California has developed multiple plans towards this end, including: draft Vibrant Communities and Landscapes Plan, the Forest Carbon Plan, and the Healthy Soils Initiative.

Finally, we need to change our development patterns to help preserve agricultural lands and open space. One study found that developed areas generate more than 50 times the carbon emissions than agricultural land.

Combatting climate change worldwide is as much about ensuring that working and natural lands can sequester carbon as it is about reducing industrial emissions. Rain forests, for example, absorb and sequester massive amounts of carbon, which, if released, would overwhelm the climate system. Better baseline data and greater sequestration are key to California's efforts.

Next blog: Resilience and Adaptation

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