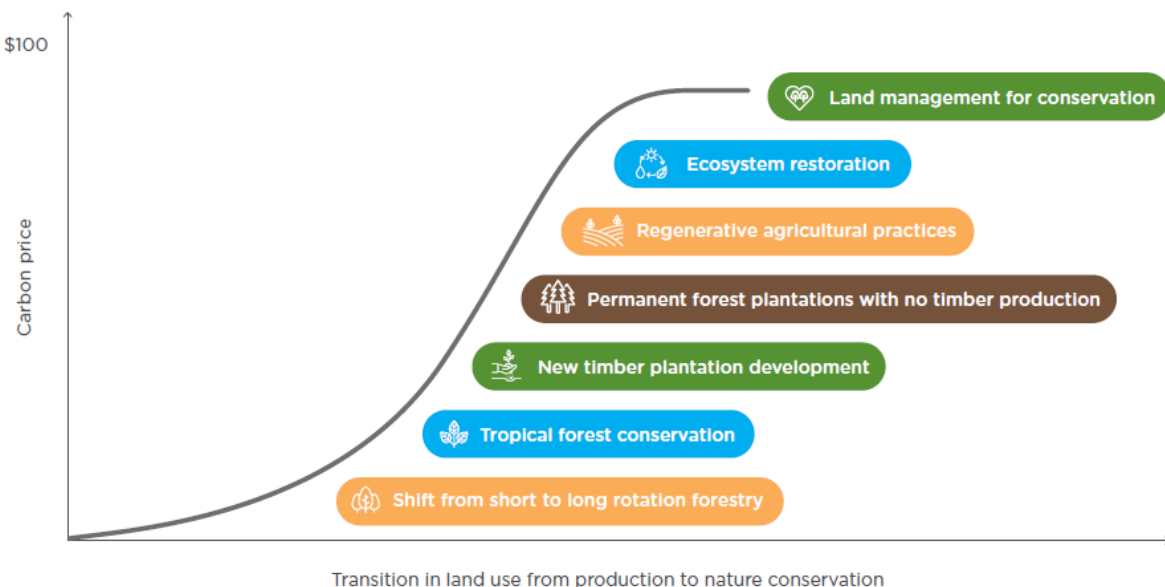


Overview

All modelling that limits global warming to under 2°C requires both eliminating deforestation as well as reforestation of hundreds of millions of hectares by 2050 in order to remove carbon from the atmosphere.¹ “Removals” are critical to achieving net zero, which by definition is a state in which greenhouse gases released into the atmosphere are balanced by emissions removals out of the atmosphere. Further modelling of potential activities that can limit global warming to under 2°C by 2030 indicates that approximate a third of cost-effective mitigation by 2050 can be provided by Natural Climate Solutions.² This transformation in land use will require the mobilisation of hundreds of billions of dollars of investment. This investment must be channelled into Natural Climate Solutions—the protection of threatened forests, improved management of forestry and agricultural production systems, and reforestation of landscapes.³

Climate change policy and greenhouse gas (GHG) emissions trading systems and carbon credit schemes in major agricultural economies are already creating value for carbon sequestration in forests. Rising carbon prices are driving new investment decisions in forestry and in land management—with more value and expected investment return shifting to activities that increase carbon sequestration. As the price of carbon rises, land use shifts from grazing, crop production, and lower value forestry toward longer forestry rotations, new plantation establishment, regenerative agricultural practices, and ecosystem restoration. The tipping point among these land uses can be sudden, and cash flows associated with increased carbon sequestration increasingly become capitalised into land values. The graph below is illustrative of these tipping points in land use against rising carbon price.

Figure 1 – Illustrative Pathway of Land Use Change with Rising Carbon Price



The California carbon market, one of the largest in the world, has created substantial new value for forests across the United States that have the potential to support the state’s climate change mitigation policy. The carbon price

¹ United Nations Intergovernmental Panel on Climate Change, *Special Report: Climate Change and Land*.

² Roe et al (2019), “Contribution of the Land Sector a 1.5°C World,” *Nature Climate Change*.

³ NCS may also sometimes be referred to as “nature-based climate solutions” and “nature-based solutions”.

created by the California market is creating value for reduction in harvesting and longer rotations. By enabling regulated GHG emitters in California to use carbon offsets from U.S. forests to meet a portion of their emission reduction targets, California is effectively re-segmenting the US forestland investment market, creating new opportunities for revenue generation from carbon held on forestland assets that otherwise would have generated income only from timber sales.

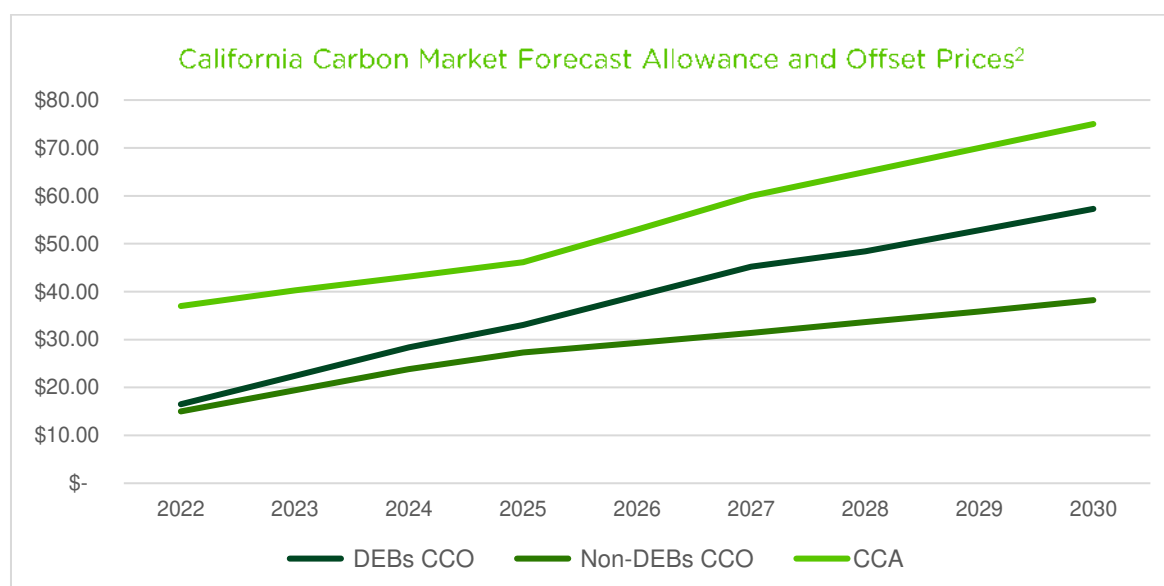
California’s Emissions Trading System

Overview

California has implemented an emissions trading system with an offset program that seeks to reduce state emissions 40% below 1990 levels by 2030. The system has been operating since 2013 and covers approximately 80% of the state’s emissions. Regulated emitters are required to purchase and surrender California Carbon Allowances (CCAs) to cover emissions. CCAs are acquired through a quarterly auction where floor price increases at 5% plus CPI each year or via a secondary spot market. Up to 4% of obligations can be covered by the surrender of verified carbon offset credits (California Carbon Offsets, CCOs), which can be created through five project categories, including carbon sequestration projects on US forests.⁴ The program creates a declining cap on emissions over time, creating a material economic incentive to reduce emissions and support rising pricing for CCAs and CCOs. After being auctioned by the government, CCAs trade on commodity futures exchanges, notably the Intercontinental Exchange, enabling daily price discovery of the carbon price in the California carbon market.⁵

CCOs typically trade at a discount to the CCA price; the discount has historically ranged from 5% to 25% depending on the key terms associated with the CCO transaction (e.g., whether spot or forward, unit contingent or firm volume, and risk-shifting terms between offset vendor and offset purchaser). Thus, covered emitters have an incentive to first invest in internal emissions reductions with a marginal cost lower than the offset price, then purchase offsets, and then purchase allowances from the auction or the secondary market to meet their compliance obligations.

Figure 2– California Carbon Market Forecast Allowance and Offset Price (USD)⁶



⁴ For more information, see <https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program>.

⁵ For more information, see <https://www.theice.com/products/71544060/California-Carbon-Offset-Futures>.

⁶ Footnote: ClearBlue Markets for CCA Forecast. New Forests analysis of third-party forecasts from ClearBlue Markets and CaliforniaCarbon.info for CCO forecasts. DEBs stands for offsets providing Direct Environmental Benefits to the state of California.

Forestry in the California System

CCOs can be generated from forestry projects under the “California Offset Protocol for US Forest Projects”.⁷ Offset projects developed on US forestlands have contributed approximately 80% of total offset supply to the California market to date.⁸ The most common project type for forests is improved forest management.

California’s forest carbon protocol uses a performance-based metric that applies objective third-party data to set the baseline. The protocol uses US Forest Service data to determine average carbon stocks regionally in different forest types across the United States. A proponent of a carbon project can then generate carbon credits by protecting carbon stocks for 100 years that are above the relevant regional average carbon stocks (referred to as the “common practice” baseline) and by further increasing carbon sequestration by the forest through biological growth. A 100-year harvest schedule is modelled to demonstrate that it would be legally and financially feasible to reduce inventory to the regional average inventory, and carbon stored in harvested wood products is computed to derive the final project baseline.

California’s forest offset program is one of only a few programs that has significant potential for climate change mitigation in US temperate forests, along with a host of other co-benefits including biodiversity, wildlife habitat, and improved water quality.

Investment Implications

The California carbon market creates optionality in forestry management for investors, including creation of value for conservation and further growth of mature forests. New Forests has found that managing forests for optimal management of timber and carbon cash flows can lead on average to 200 to 400 basis points of return versus a timber-only management regime. Key aspects of the investment opportunity include:

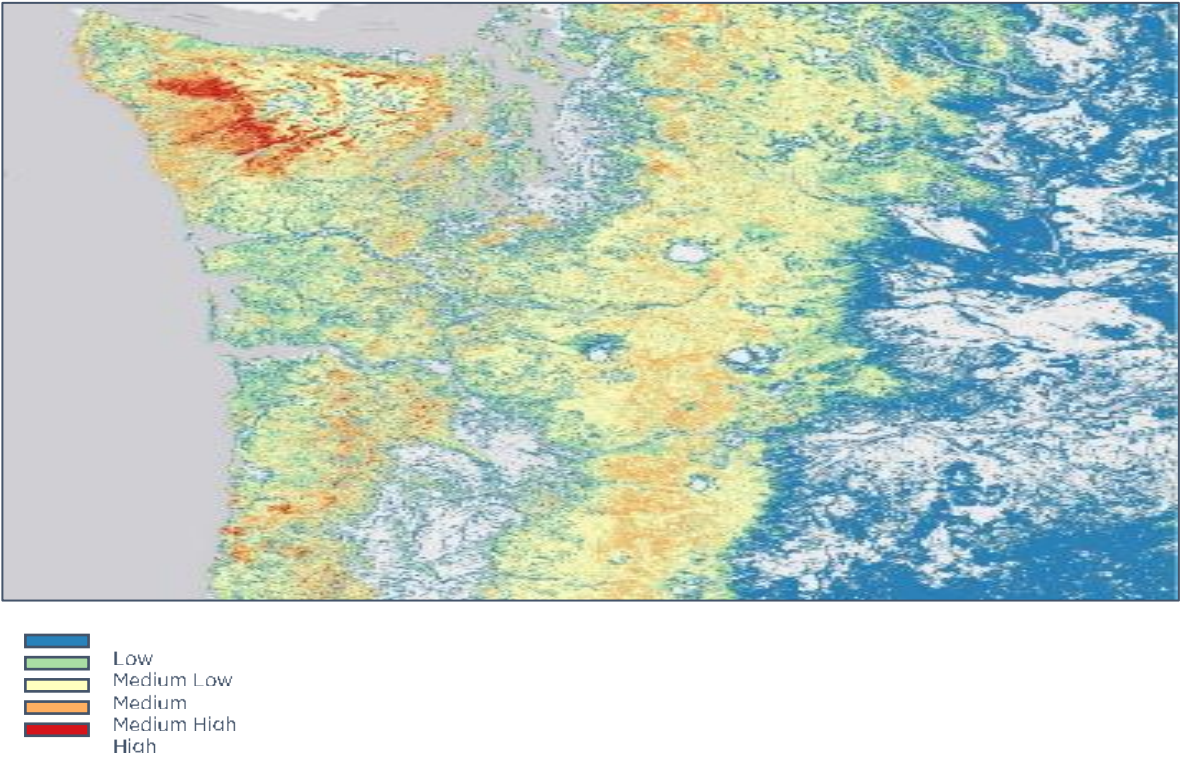
- **Frontloaded income.** In New Forests’ experience, revenue from initial forest carbon offset sales can return 10–40% of asset value within three years of acquisition without reducing future net operating income from log sales.
- **Current income optionality.** Net inventory growth in a high-carbon value forest can be sold in the log or carbon markets depending on the relative price of each product. This option value in uncorrelated commodity markets can smooth cash flows and provides incentive to manage forests growth and value on longer rotations.
- **Analytical Advantages.** New Forests has found that the capacity to identify, accurately price, and monetize carbon value in US forests is not broadly held among institutional timberland owners. New Forests’ own proprietary geospatial analytics, described below, support our capacity to identify and underwrite assets for a “carbon forestry” strategy.
- **Material barriers to entry for most US timberland investors.** Large-scale carbon market participation by institutional timberland owners is limited by a number of factors, including inability of intensively managed plantations to participate in the California market and the requirement for sustainability certification of all forests managed by a project proponent, not just on the carbon project area.

⁷ For more information, see <https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/compliance-offset-protocols/us-forest-projects>.

⁸ California Air Resources Board, ARB Offset Credit Issuance, <https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/arb-offset-credit-issuance>; and New Forests’ analysis.

New Forests has developed proprietary geospatial analytics to assess potential carbon asset value in privately held forestlands across the United States in accordance with the California forest protocol rules. The illustrative map highlights “carbon hot spots” where carbon stocks are above common practice baselines.

Figure 3 – Distribution of Carbon Value in Pacific Northwest Forests



Conclusion—Role of Climate Finance in US Forestry Investments

With a market size of nearly USD 4 billion through 2030, offset demand driven by law, offset supply constrained to date, and approximately 80% of offset supply sourced from US forests to date, the California carbon market has created a significant value opportunity for carbon storage in US forestlands. New Forests believes that the value placed on carbon by the California carbon market is reallocating value in US forests in ways that are not broadly understood by many forest owners, creating new opportunities for revenue generation within the low-risk, low-volatility US forestland asset class. At the same time, the California emissions trading system is contributing to climate impact within the state, supported by the offset program and other California climate policies. State-wide GHG emissions decreased 7% from the start of the program in 2013 to 2019.⁹ California's 2020 target was reached four years in advance. Today, the emissions trading program is an integral part of California's mandate to reach 40% below 1990 emission levels by 2030 and carbon neutrality by 2045.¹⁰

Managing landscapes for multiple economic, environmental and social objectives, including climate change mitigation and nature-positive action, is an increasingly important aspect of forestry asset management.¹¹ New Forests recommends that investors start viewing management of landscapes for multiple values including sustainable production of timber integrated with forest conservation, reforestation and ecosystem restoration. This new view of integrated landscape management will require reallocation of capital and dynamic re-optimisation of returns linked to climate impact and portfolio decarbonisation.

⁹ See <https://ww2.arb.ca.gov/ghg-inventory-data>.

¹⁰ See <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

¹¹ New Forests can provide further information upon request regarding climate science underpinning the California carbon market and offset system design. For additional information on environmental and social considerations related to carbon markets more generally, see New Forests' paper "Managing Carbon from Investments in Natural Climate Solutions," <https://newforests.com.au/wp-content/uploads/2022/04/New-Forests-Managing-Carbon-from-Investments-in-Natural-Climate-Solutions-April-2022-1.pdf>. For more information on demand-side and supply-side integrity in carbon markets, please see New Forests' Position Statement on Carbon Credits Integrity, <https://newforests.com.au/wp-content/uploads/2021/12/NWF-301817-Carbon-Credits-Integrity-WEB.pdf>.