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CARBON PFES STUDY TOUR LESSONS LEARNED

VIETNAM FORESTS AND DELTAS (VFD) PROGRAM

INTRODUCTION

Carbon pricing mechanisms offer a way for countries to meet their greenhouse gas (GHG) emissions reductions and economic development goals, while protecting the environment and public health. They stimulate GHG emitters to reconsider their business models, adopt new technologies with a lower emissions profile, and/or identify ways to lower the impact of their emissions through other GHG reducing activities such as carbon offsets. At the same time, they generate a much-needed source of finance for governments to invest in climate change mitigation or adaptation measures, as well as other social or environmental programs.

As part of efforts to support Vietnam in its process to develop a Carbon Payment for Forest Environmental Services (C-PFES) policy, in August 2019 the United States Forest Service and the United States Agency for International Development's Vietnam Forests and Deltas program traveled with a delegation of officials from key Vietnamese Government agencies and departments to participate in a study tour to learn about carbon regulatory systems in California, USA and British Columbia, Canada.

The delegation met with government policy makers and regulators, participants in the systems, as well as organizations that have provided support and guidance in developing carbon regulatory programs worldwide. During these meetings, the participants had the opportunity to learn and exchange questions and ideas about how carbon regulation policies could apply in Vietnam.

This paper presents a brief summary of the California and British Columbia systems, and an overview of the key lessons learned that are of relevance for developing C-PFES in Vietnam.

CALIFORNIA

Overview of California's Cap-and-Trade Program

As the largest economy in the United States, and the fifth largest worldwide if measured individually[1], California's achievements in lowering its emissions provide an important example for other countries. In 2006, the state set a goal that by 2020, it would reduce emissions to 1990 levels, and by 2050, reduce emissions below 1990 levels by 80%. Through a series of policies including its Cap-and -Trade Program, California is ahead of schedule, having already met its 2020 emission reduction goals by the end of 2016[2]. The Cap-and-Trade Program covers 85% of California's emissions, and thus is a major part of the state's climate progress.

1 https://www.cbsnews.com/news/california-now-has-the-worlds-5th-largest-economy/

2 https://www.latimes.com/local/lanow/la-me-adv-california-climate-pollution-20180722-story.html

OPTIONS FOR COMPLIANCE WITHIN THE CAP-AND-TRADE SYSTEM

- Companies keep or lower emissions below their assigned limit
- Companies purchase allowances from the auction to cover excess emissions
- Companies purchase offsets from carbon projects

How it Works

Every year, a limit is set on emissions from entities/companies covered under the Cap-and-Trade program: electricity generators, large industrial emitters, distributors of transportation, natural gas, and other fuels. That limit or 'cap' is divided among these covered entities as 'allowances'. Companies must keep their emissions total under their assigned allowance limit, purchase additional allowances through the state-run auction, or purchase offsets provided by certified carbon projects.

The emissions cap has lowered over time, helping to guarantee that emission reduction goals can be met. This gradual shrinking of total permitted emissions has also provided companies necessary time to transition. As part of the program's initial roll-out, most allowances were issued to companies for free. Over time, the number of free allowances has decreased, increasing their auction value from around USD$12.00 per t CO_2e in 2014 to USD$17.45 in 2019. Revenue from the auctions fund additional climate change mitigation and environmental programs, as well as social programs.

Most allowances sold at the state-run auctions are supplied by companies whose emissions fall below their issued free allowances. This provides an additional financial incentive for companies to lower emissions through technology or other processes. Alternatively, companies may choose to purchase carbon offsets equal to up to 8% of their excess emissions from carbon projects. These projects follow approved protocols to help guarantee long-term and permanent positive emission reductions or increased carbon sequestration from sectors and industries not covered by ARB's regulatory framework (i.e., most carbon offsets in California are supplied by forestry projects).

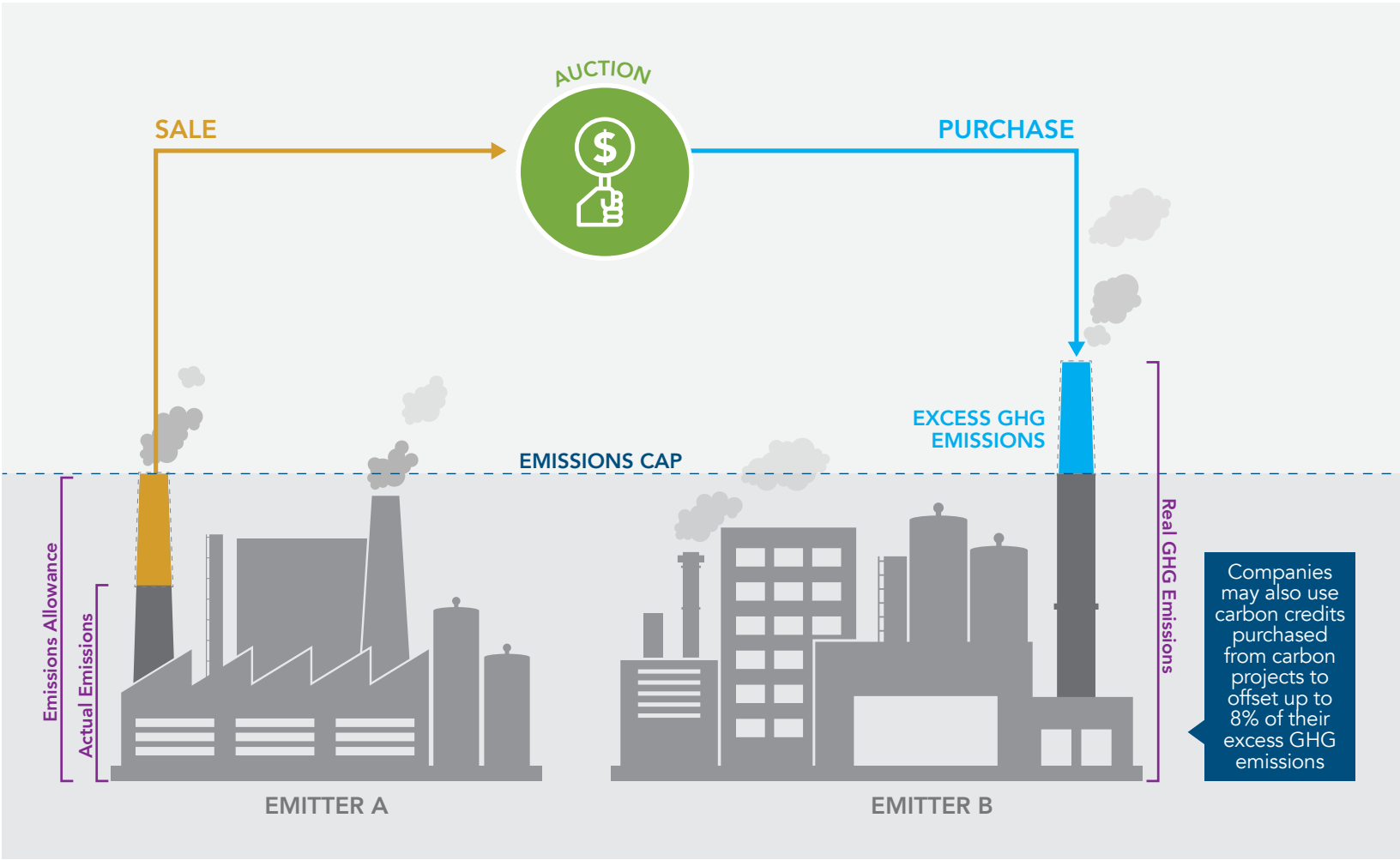


Figure 1: Diagram of how companies comply with the California Cap-and-Trade Program

Outcomes

By setting a limit on emissions, the Cap-and-Trade Program ensures climate goals are met while providing flexibility to companies to make compliance decisions that best fit their operational, shareholder, and growth needs. Cost-effective reductions can be achieved through a compilation of options, while over time, price signals motivate long-term investment in low emissions technologies and processes.

Despite initial concerns that the Cap-and-Trade Program might lower the competitiveness of California's economy or drive business out of the state, California's economy has steadily grown (average 5.5% growth since 2013[3]). While companies have the burden of compliance and reporting requirements, most Californians support climate-friendly policies and action[4], driving companies to embrace Cap-and-Trade as an important part of operating in California's strong economy. Accordingly, in 2017, the state legislature voted to extend the state's Cap-and-Trade Program until 2030 with some rule changes that take will take place in 2020.

MEETINGS

CALIFORNIA AIR RESOURCE BOARD

Government Policy Maker and Regulator

The California Air Resources Board (ARB) is the primary government body that oversees state climate change mitigation policy and implementation, including Cap-and-Trade, the Low Carbon Fuel Standard and other complementary measures to reduce carbon emissions. ARB is responsible for collecting and analyzing data reported by companies on greenhouse gas emissions and sets annual state and company emissions caps[5].

ARB also runs the quarterly state auctions which to date have raised over USD$11 billion to fund further GHG reduction efforts in the state of California.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM ARB

- There must be a legal framework to provide the mandate for emission reductions
- Clear and transparent third-party auditing enhances credibility
- Offsets must be 'quantifiable, additional, and permanent'
- Public attitudes about climate change in California drive companies to more readily adopt ARB's ambitious actions.
- Revenue from auctioned allowances goes to a range of programs in California, including disadvantaged communities, customer rebates, and forest restoration programs.

3 https://www.statista.com/statistics/306775/california-gdp-growth/

4 Baldassare et al. 2017.PPIC Statewide Survey: Californians and the Environment. Public Policy Institute of California.

5 All companies must undertake and report on their own greenhouse gas inventories which also must be validated by a third party.

PACIFIC GAS AND ELECTRIC

Company that Pays for Carbon Emissions

Pacific Gas and Electric (PG&E) is the largest power utility in California, providing electricity to 16 million customers in Northern and Central California. As a power generator and importer, and natural gas distributor, its emissions are regulated under the Cap-and-Trade Program. PG&E fulfills its compliance obligation through a combination of allowances and offsets and recovers most of the associated costs through customer rates. The company has also engaged in ambitious efforts to lower its emissions over time, sourcing 80% from renewable (non-GHG) sources.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM PG&E

- The public consultation process during policy development increases companies' willingness to participate.
- Providing companies flexibility in compliance options improves participation and allows them to make the decisions that best meet their goals.

PG&E has been a strong supporter of the Cap-and-Trade Program since its inception, engaging with the state government to provide feedback and inputs. PG&E recognized that California was going to introduce climate change policies, and favored Cap-and-Trade over other options due to its flexibility in providing PG&E a range of compliance options, allowing PG&E to be more responsive to market conditions, and purchase offsets that (1) trade at a discount over the state-run auction price for offsets; and (2) are generated by projects designed to support broader social and environmental programs.

Figure 2: Study Tour Delegation at Pacific Gas & Electric Headquarters, San Francisco, CA

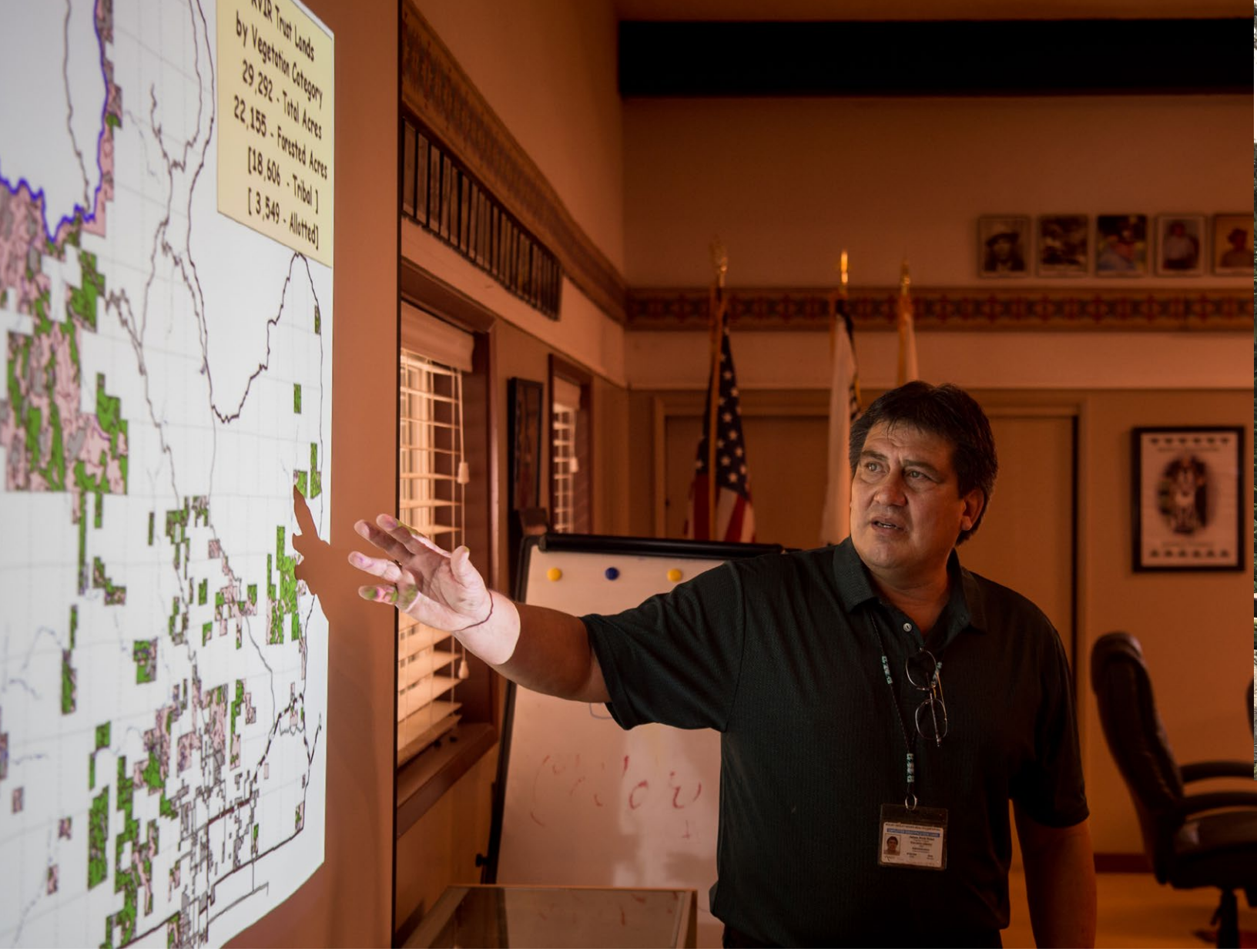
ENVIRONMENTAL DEFENSE FUND

Advocacy Organization

The Environmental Defense Fund (EDF) is a member-based organization that works with countries worldwide focusing on climate, health, ecosystems, and oceans. Their Climate and Energy program promotes market-based mechanisms to address climate change and supports states and countries in piloting carbon regulatory programs. They place a strong emphasis on the importance of piloting for ensuring long-term success of market-based carbon regulation, as they provide an opportunity to test approaches, build capacity, improve data, and form legislation that is effective.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM EDF

- Piloting is a crucial step in introducing and refining carbon regulation.
- It has to be more expensive to not comply than to comply.
- The benefits of participating in pilots should be clearly conveyed to companies: getting a head-start on their competitors in transitioning, providing feedback to the regulators, and being viewed a willing participant in climate-forward policies
- It is critical to listen to industry participants and find solutions that work for them.



President of RVIT's Tribal Council James Russ presents the tribes' forest carbon project. Photo: Josh Edelson

ROUND VALLEY INDIAN TRIBES CARBON PROJECT

Forest Manager and Carbon Payment Recipient

The Round Valley Indian Tribes (RVIT) in Covelo, California have been managing a forest carbon offset program on their tribal lands since 2011 that covers more than 2,000 hectares. As with many Native American tribes in California, they manage forest lands on their reservations which they maintain as a source of revenue from timber as well as for their cultural value, non-timber forest products, and fishing. Timber management is low intensity (selective single tree harvesting on a 10-year rotation). The RVIT willingness to commit to harvesting regimes that would increase carbon stocks in their forests allowed them to decrease the intensity of harvesting in exchange for revenues from storing more carbon in trees.

To sell carbon offsets, they entered into a 100-year contract, committing to a yearly inspection and re-inventory of carbon stocks every 12 years. Developing the first carbon stock inventory was not overly burdensome due to existing timber management records. To date, the tribe has received over USD$1.2 million from selling carbon offsets which they have been reinvested in the community to drive economic development.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM RVIT

- The revenue received for selling carbon offsets must be substantial enough to incentivize climate mitigation activities (e.g., sustainable forestry or reforestation).
- RVIT's existing management practices and timber inventory made opportunity costs for participating relatively low -- enough to offset the costs of project management and validation and provide revenue to the community.

Figure 3: Study Tour Participants in British Columbia

BRITISH COLUMBIA

Overview of British Columbia's Carbon Tax Program

British Columbia launched the provincial carbon tax in 2008, among other climate action measures. It was the first broad-based carbon tax introduced in North America, covering 70% of provincial emissions. Carbon tax payments are based on the purchase or use of fossil fuels (i.e., gasoline, diesel, and natural gas). Through a simple tax placed on volume of fossil fuel purchased, the system created an incentive across sectors and industries to use less fuel, and therefore lower overall state emissions.

The carbon tax system is overseen by the British Columbia Ministry of Forests, Lands, and Natural Resource Operations and was designed to be revenue neutral, where any revenue collected goes toward lowering taxes elsewhere or issuing tax credits. This includes tax credits to maintain industry competitiveness as well as ensuring vulnerable groups such as low-income individuals and families are not significantly negatively impacted. As in the California system, the companies were given time to adjust to the system and introduce measures to lower emissions, with the price of the tax increasing over time.

In 2019, Canada's nationwide carbon pricing mechanism went into effect as part of the Pan-Canadian Framework. It incorporates commitments from Canada's national, provincial, and territorial governments to address climate change and meet Canada's goal of reducing GHG emissions 30% by 2030. The framework does not change British Columbia's carbon tax system as it only imposes a carbon pricing mechanism on provinces whose existing carbon pricing systems don't meet the federal standards or have yet to enact their own systems.

How it Works

A fixed annual tax on carbon released by fossil fuels is set by the government of British Columbia. This tax increases over time at a rate of CAD$5.00 (USD$3.75) per tonne per year, until it reaches CAD$50 (~USD$37.50) per tonne in 2021. Because different types of fossil fuels have different greenhouse gas intensities (emissions per liter combusted), the tax levied on different fossil fuels varies.

The Canadian national system also has a mechanism that allows industries to pay based on their emissions over limit if they cannot pass on the carbon cost to consumers.

Outcomes

In 2017, British Columbia collected CAD$1.2 billion through its carbon tax, with approximately 70% of this revenue coming from businesses, 27% from individuals, and 3% from government institutions. This revenue was redistributed to individuals and businesses through rebates and tax credits. As the tax rate increases over time, additional revenue will provide further carbon tax relief, maintain industry competitiveness, and encourage other new green initiatives.

British Columbia's carbon tax system has been recognized as an effective mechanism for lowering emission as well as stimulating economic development through clean technology and green jobs. Overall, the carbon tax is seen as having positive environmental and economic benefits. Studies have concluded that the carbon tax has resulted in overall reduction of GHG emissions (5-15%) since 2008[6] without any negative impact on jobs or the local economy and maintains public support[7].

CANADIAN FOREST SERVICE

Government Scientific Research and Policy Guidance Agency

The Canadian Forest Service (CFS) provides science and policy expertise and advice on national forest sector issues, with a core mandate of conducting scientific research on Canada's forests to inform policy decisions. CFS is a key partner in the Pan-Canadian Framework.

Canada has a comprehensive National Forest Carbon Monitoring, Accounting, and Reporting System, which reports on past carbon dynamics, projects future carbon scenarios, and supports development of climate mitigation and adaptation strategies.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM CANADIAN FOREST SERVICE

- CFS has done extensive analysis of climate change mitigation strategies, and conclude that a systems approach is important.
- Forest carbon and mitigation goals need to be balanced with other forest management goals.

British Columbia covers 95 million hectares, (about twice the size of California), 64% of which (60.3 million hectares) is forest area. While these forests store a vast amount of carbon, forest fire and pests are major threats that result in emissions. CFS works to enhance the positive impact of British Columbia's forests through supporting recovery from fire and to reduce impacts from pests. CFS also undertakes research to identify approaches to enhance carbon capture through uses of wood and wood products that can store harvested wood carbon for longer periods.

BRITISH COLUMBIA MINISTRY OF FORESTS, LANDS, AND NATURAL RESOURCE OPERATIONS

Government Policy Maker and Regulator

British Columbia's Ministry of Forests, Lands and Natural Resource Operations is responsible for implementing and overseeing of the province's carbon tax. Within this ministry, the Forest Carbon Initiative (FCI) develops and implements forest activities that reduce emissions and sequester carbon in British Columbia's publicly owned forests. Examples of activities under this initiative include forest rehabilitation and tree planting; utilization through improved harvest and processing practices; fertilization of forest areas; and road rehabilitation.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM BC MoFLNR

- The 'revenue-neutral' model generates a source of finance to offset potential adverse effects on vulnerable, less flexible industries and populations
- Tax system stimulates behavior change across the population
- British Columbia has maintained positive economic growth while reducing emissions, so the carbon tax has not negatively impacted the economy, as some feared.

6 Murray and Rivers, 2015. British Columbia's revenue-neutral carbon tax: A review of the latest "grand experiment" in environmental policy. Energy Policy, Volume 86, pages 674-683.

7 Yamazaki, 2017. Jobs and climate policy: Evidence from British Columbia's revenue-neutral carbon tax. Journal of Environmental Economics and Management, Volume 83, pages 197-216.

CEMENT ASSOCIATION OF CANADA

Company that Pays for Carbon Emissions

The Cement Association of Canada is a business association that supports the cement industry and promotes locally-produced cement and concrete. There are two large cement manufacturing plants and 152 smaller cement facilities in British Columbia, with the sector supporting 23,000 jobs and mobilizing CAD$11 billion in direct, indirect, and induced economic impact.

British Columbia's carbon tax has had a negative impact on the province's cement companies as the added cost of fossil fuel use during cement production undermined their competitiveness with international producers. According to the cement association's analysis, after the carbon tax was instituted in 2008, imports of cement into British Columbia increased from 6% to 40%. This has been recognized by British Columbia's policy makers, with whom industry representatives are working to develop and implement technology for producing lower emission, high quality cement.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM CEMENT ASSOCIATION OF CANADA

- Carbon fees can have impact on trade and local economies, sometimes undermining competitiveness.
- Policy makers must study and consider incentives and offset disincentives for companies to participate.

CHEAKAMUS COMMUNITY FOREST

Forest Manager and Carbon Payment Recipient

The Cheakamus Community Forest (CCF) is a non-profit association created in 2009 by two First Nations indigenous groups and the resort municipality of Whistler. CCF developed a forest carbon project which generates revenue that supports the community. The CCF forest carbon project has demonstrated GHG emissions reductions from improved forest management practice including reduced annual allowable cut and increased buffer areas in high ecological value areas, including along rivers. The community has been receiving carbon payments for eight years and has reinvested the revenue to increase the forest area, improve public education, and support local infrastructure needs, including that which serves tourism.

LESSONS LEARNED AND PERSPECTIVES FOR C-PFES FROM CHEAKAMUS COMMUNITY FOREST

- Carbon payments provide an alternative way to manage forest resources to maximize economic, social, and environmental benefits
- It took three years to develop the forest carbon project – this requires patience and dedicated funding

Figure 4: Study Tour Participants in Whistler National Forest, British Columbia, Canada

CONCLUSIONS

- California's Cap-and-Trade Program is a market mechanism, with prices based on supply and demand of emissions allowances. It can serve as a useful example for the future of carbon PFES in Vietnam especially if the government wishes to apply a more flexible, market-oriented carbon regulation system. It also provides a potential connection to future involvement from other ministries such as MONRE who can play a role in verifying CO_2e allowances and/or credits.

  California's Cap-and-Trade, market-based system has been highly effective in reducing emissions and allowing the state to meet its ambitious climate goals. However, it is a more complex system than British Columbia's carbon tax, as it necessitates more extensive bureaucratic, legislative, and regulatory oversight and support to assign, assess, and verify emissions across multiple industries.

- British Columbia's carbon tax system shows how revenue from the taxes can be reinvested to offset any negative impacts. In Vietnam, Ministries such as Ministry of Finance could support the design of carbon PFES to see how carbon PFES revenues could also support payers to maintain industry competitiveness.

- In both British Columbia and California, companies were concerned about the impacts of carbon regulation on their business and many did not support the systems at first. Nevertheless, believing carbon payments were a necessary and effective way to address climate change and support local needs, the governments were able to implement policies that ultimately received strong public and private support. C-PFES in Vietnam will therefore benefit greatly from a strong legal framework and enduring political support.

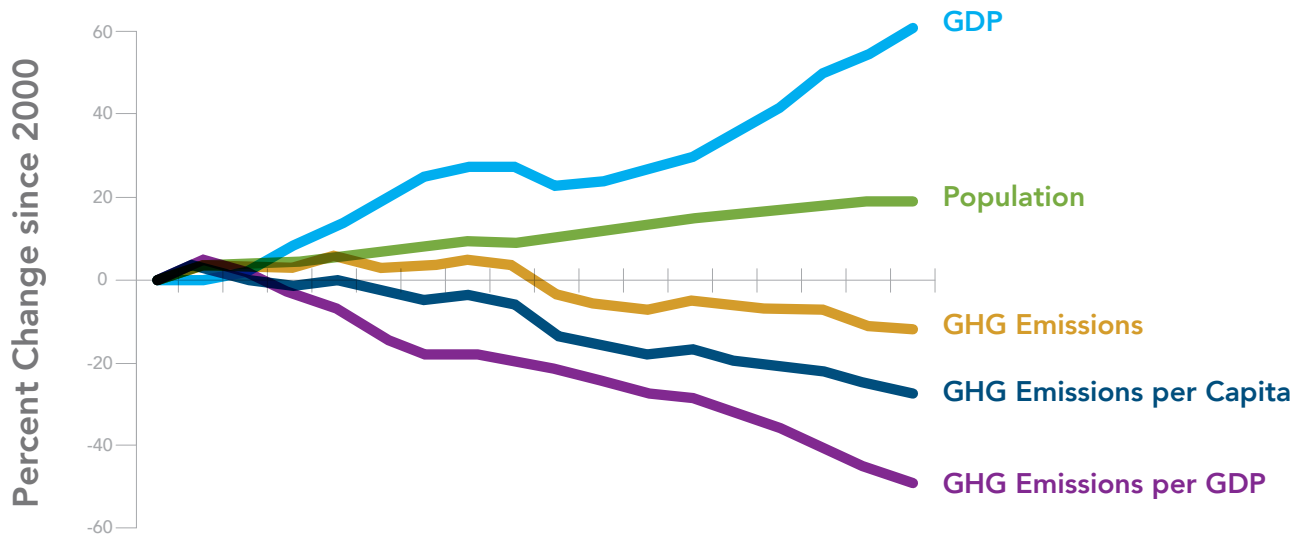


Figure 5 Graph of California's GDP increasing and emissions decreasing (California Air Resources Board (ARB) data)

- British Columbia and California have demonstrated that regulating carbon emissions through market or tax-based systems can both decrease emissions and increase economic growth. This is strong evidence that these systems can be "win-win" mechanisms.

- International experience shows that systems can have great flexibility in how revenue is used. With PFES, the assumption is that all revenue must follow regular PFES payments rules (% for fund, rest to forest owners for forest protection), but both California and British Columbia use money for different purposes (e.g., tax credits, supporting poor households, etc.).

- Outside of British Columbia and California, South Africa's new 2019 carbon tax offers an example for how cement companies emitting CO_2 from clinker production can pay for their emissions. Cement companies operating in South Africa such as Afrisam have integrated this tax to their production cost since July 1, 2019.

- Many countries are introducing carbon payment systems with gradual impacts on private industry, allowing them to adjust to increased costs or introduce measures to lower emissions, but also increase the contributions over time to help reach emissions targets. In carbon tax systems, rates increase over time (such as British Columbia and South Africa), and in market-based systems, the emissions cap decreases over time.

- In most carbon payment mechanisms, payments for carbon are managed and accounted separately from other governmental budgets, allowing agencies managing emission reduction targets to invest in mitigation or adaptation measures more directly.

- Many carbon payment mechanisms around the world have strong communications campaigns that target private sector, government, and local communities to increase their awareness and understanding of how the system works and its benefits. This leads to increased support for continued implementation as well as serving as a potential avenue for critical feedback and suggestions for improving the effectiveness of the program. Vietnam should consider developing a strong and active communications campaign for carbon PFES that can build support from companies and local communities for the new system.

- All successful international examples of carbon payment mechanisms have strong data collection and monitoring systems which allow regulators and stakeholders to have high confidence in how the system is implemented and its impacts over time. For Vietnam, this emphasizes the importance of having clear data sharing requirements between companies, different ministries, and between provincial and national levels. It is also important that Ministries are given clear guidance on their roles and responsibilities related to monitoring, data collection, and data sharing.

- Finally, it is important to note that almost all carbon payment mechanisms are NOT designed just to make money – rather, they are designed to encourage industries and the public to reduce emissions, promote adoption of new and improved technologies, and to support local economies, communities and the environment.

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