

CARBON FUTURES

BY ARCHETYPE FACTORY



This report seeks to outline **emerging behaviours, motivations and opportunities** in the future of tradable carbon.

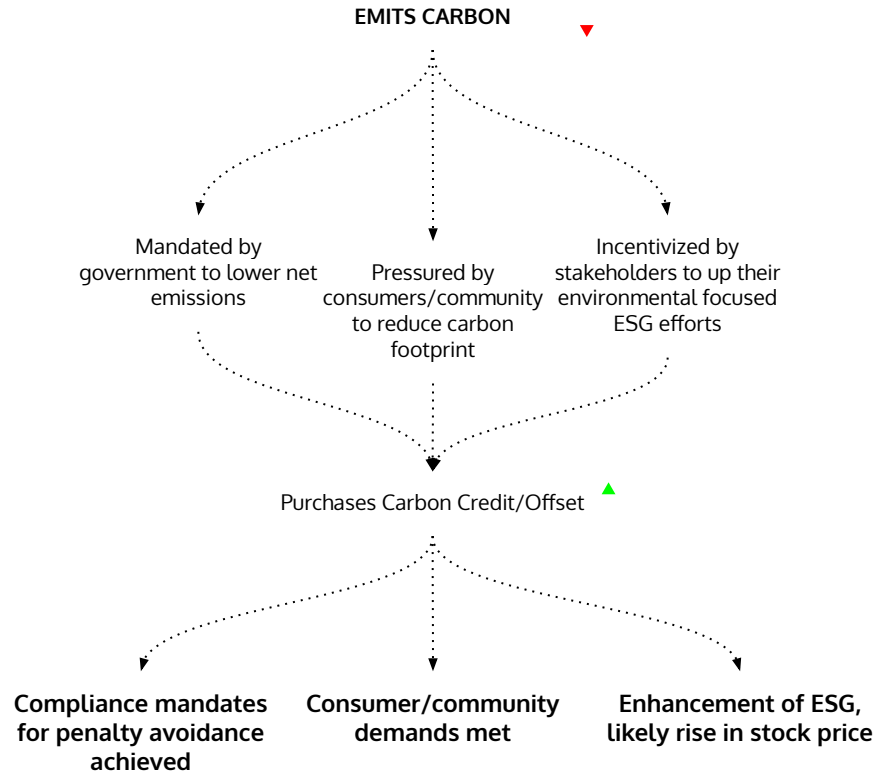
As climate change progresses and new models of change are being tested, net-carbon mitigation is proving the most effective and scalable model.

Net-carbon mitigation sees corporations or individuals purchasing carbon via offsets or credits from certified carbon initiatives to offset their net carbon, in some cases achieving 'carbon neutrality' or 'carbon positivity'.

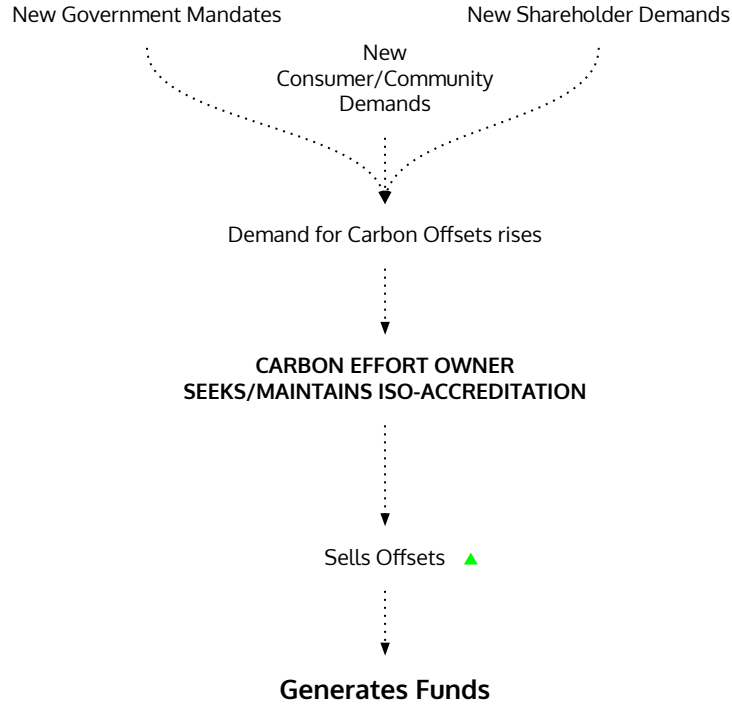
Incentives for net-carbon mitigation include carbon taxes, government mandates and ESG ratings.



Incentive Model FOR CARBON PRODUCERS



Incentive Model FOR CARBON EFFORT OWNER



Carbon Initiative Owner

MOTIVATION TYPES

Conservation effort for the purpose of selling carbon offsets

Businesses are being founded for the purpose of running ISO-certified conservation efforts, often capitalizing on political affiliations which are rewarded with positions on the board.

Eg. Carbon Checkout acquires land so that it can run carbon initiatives and sell offsets direct to consumer via browser add-on.

Existing conservation effort looking to further monetize efforts

Often an NGO or non-profit run initiatives for the primary purpose of conservation, which may have existed before carbon-offsetting was a known possibility, now seeking ISO-certification to further fund their efforts.

Eg. Nature Conservancy Canada has operated since the 60s, but recently received a \$10M investment from TD in return for carbon credits that TD will sell as part of their carbon reductions program.

Existing business activity where conservation is a side-effect, looking to capitalize on this

Businesses operating in clean energy, electric transportation, or that own swaths of natural lands are now examining the possibility of selling offsets.

Eg. While Tesla's EV production business hadn't posted profits for the first 10 years of their company's maturation, their sale of carbon avoidance credits became their primary business model, generating \$1.46 billion in 2021.

Carbon Credit Types

CARBON AVOIDANCE VS REMOVAL

Companies that emit carbon may opt to purchase avoidance or removal credits, depending on the demand of governments and stakeholders.

Avoidance Offsets

The carbon effort owner runs activities that usually constitute carbon emissions, but with no emissions, allowing them to sell the offset carbon they're speculated to have avoided to other companies.

Removal Offsets

The carbon effort owner runs activities that actively remove CO2 from the atmosphere and store or transform it, allowing them to sell the carbon they've offset to companies.



Carbon Credit Types

VOLUNTARY VS COMPLIANCE

The purchase of carbon offsets can be incentivised for reasons of compliance and penalty avoidance, or as a venture to speculate on the future value of carbon.

Compliance Market

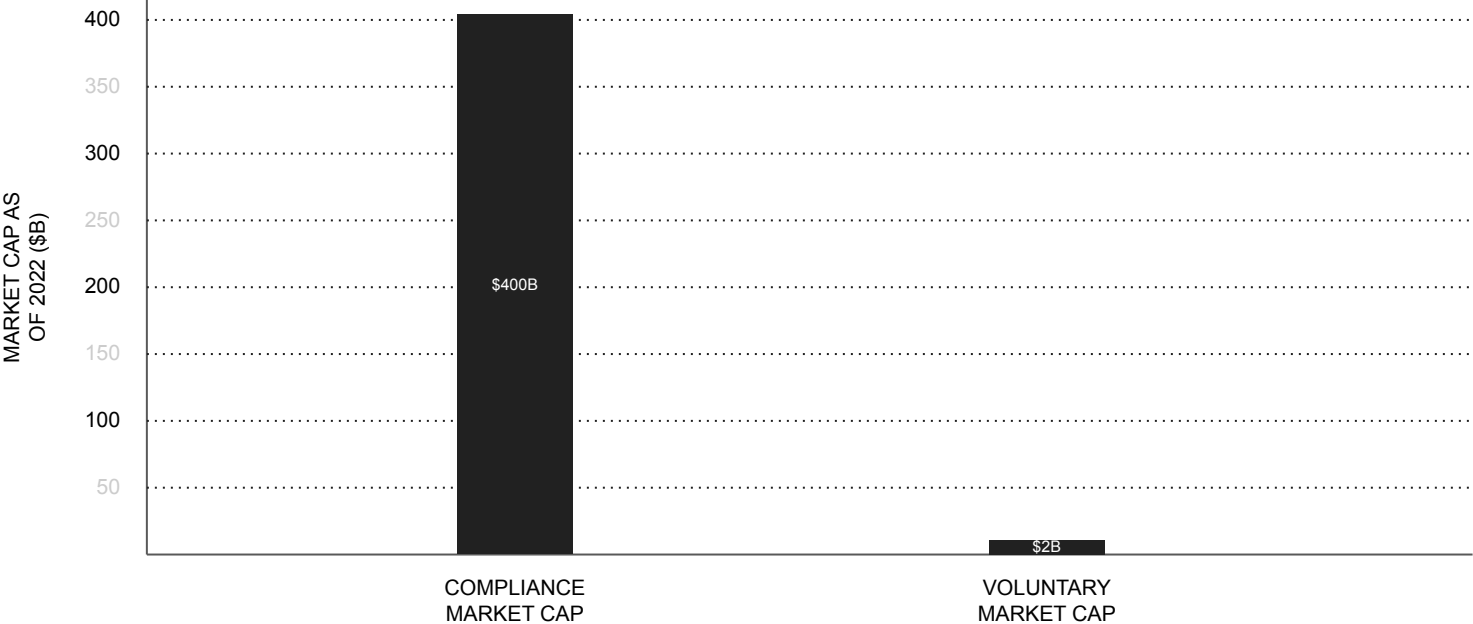
Usually large corporations, often in manufacturing or production, that emit large amounts of carbon as a bi-product of their process. Governments worldwide are introducing regulations on the amount of net-carbon a company can maintain, through means of taxation or even criminal prosecution.

Voluntary Market

Businesses that wish to improve their public reputation via carbon-neutrality campaigns or up their ESG score to appease investors may purchase carbon credits uncompelled. Less commonly but still possible, individuals may engage in the carbon cap-and-trade market, speculating on the value of carbon as a security.

Voluntary vs Compliance Markets

MARKET CAP



Carbon Sequestration METHODS

Carbon sequestration is the capture, storage and removal of CO₂ from the Earth's atmosphere, resulting in warming climates. Methods include...

Biological Sequestering

Also known as a passive sequestration, forests, oceans and soil are effective at absorbing large amounts of CO₂, and in some cases changing transforming its chemical composition.

Geological Sequestering

Injecting CO₂ into porous rocks or underground rock formations for long-term storage. Often taken from crude oil, steel or cement operations happening in boulderous regions.

Technological Sequestering

Devices and methods that remove CO₂ from the air through chemical means. This tech is early stages but expected to make up the majority of effort in the future due to greater efficiencies.



What makes a good offset? OFFSET QUALITY BENCHMARKING

For compliance purposes, the quality of an offset isn't as important, but for voluntary markets (ESG, etc), quality makes all the difference. Factors of quality include...

Esteem of Certification

Localized certifications aren't as universal as international ones, and even amongst international ones there is a range of esteem.

Actual Results

Though the validity of a carbon credit won't be impacted by underachievement in future efforts, it's trade-value and the value of future credits may be impacted.

Self-monitoring Ability

Having infrastructure for internal auditing provides additional guarantee for the carbon effort owner, the buyer of the offset and the ISO that certifies it.

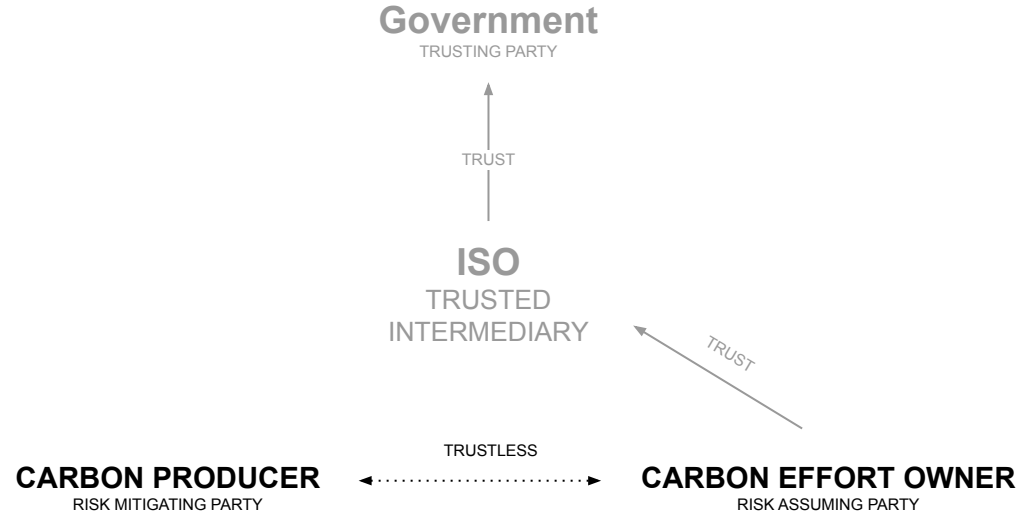
Avoidance vs Removal

Removing CO2 from the atmosphere negates further impact, but avoiding emissions all-together ensures there is no impact in the first place, having a better net-effect than removal.

Trust Architecture RELATIONSHIP MODEL

- I. the Carbon Producer and Carbon Effort Owner hold a trustless relationship
- II. the Carbon Effort Producer must trust that the ISO will certify their efforts
- III. the ISO must trust that the governments will recognize their certification toward compliance and continue funding.

This model ensures that the Carbon Producer can focus on core business activities instead of being liable for actual climate impacts, therefore mitigating their risk of non-compliance.



Key Takeaways

1. **The compliance-driven buyer is not in a position to speculate, seeks trustlessness**

They will purchase credits at the lowest cost available, so long as they qualify for compliance. Quality, perks and real outcomes do not justify higher costs for this customer.

2. **The voluntary offset buyer is motivated by perception and/or impact, seeks quality**

They will purchase credits based on esteem, recognition, brand alignment and any other perks, since they are not being compelled to buy and are already speculating on value.

3. **Political instability present the biggest risk to both parties.**

Changes to climate policy and ISO certification criteria serve to disrupt the barrier for entry and margins for both parties, and are **certain to happen** in the next 10 years.

Emerging Trends

TRADABLE CARBON

Tokenized Securities

Business Model

Digital tokens that are backed by real assets hosted on blockchains and exchanged via smart-contracts.

Sharing Economy

Business Model

A system where underutilized assets are offered as services to those who need them just-in-time.

Digital ID

Behaviour

A unique identity that can interact with digital services to prove you are you while protecting your personal information

Hard-tech Tracking

Technology

A network of devices that work together to track various geological events and relay data to the network.

DAO

Behaviour

The ability for a group of individuals to share ownership of an asset in a trustless relationship.

Surveillance Economy

Business Model

A system where instead of paying for products/services, users participate in research through monitored use.

Ownership Economy

Business Model

A system where power and economic benefit is distributed to participants, turning users into owners.

Smart Contract

Technology

Enables secure transactions under a defined protocol. Functions trustlessly without an intermediary.

Perks Economy

Business Model

Lifestyle as a service. Patrons of a business receive not only core products, but access to exclusive lifestyle systems.



Conservation through Consumption

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As climate change advances and the need for carbon mitigation grows, governments will increase pressure on individuals to mitigate their net-carbon through consumption. A Canadian consumer carbon tax on gasoline has already normalized consideration of individual carbon use. As this tax model spreads to other consumer products like single-use plastics, it will become unaffordable to consumer these products without purchasing offsets. To combat this, ordinary consumers will seek carbon-offsets to avoid taxation. For this reason, any function of business that happens to qualify as a producer for carbon offsets will also function as a carbon-haven to their customer-base.



Conservation through Consumption

SCENARIO

Jeremy is an avid outdoorsman willing to travel far distances for a prime location. With new government policies however, he's having to pay thousands of dollars each year to the government to make up for his carbon usage from driving. To avoid this, Jeremy packs a bag and tries hitch-hiking his way this time.

He's picked up by a man who also happens to be headed toward campgrounds. Jeremy was curious, so he asked the man how he afforded to maintain his hobby while driving such a large truck far distances. The man explains something that would change Jeremy's life.

He explains that he's a member of a co-op that provides access to various campgrounds and lodges across the country. As a member, he receives a carbon dividend each month. This is more than enough to cover his trips, and allows him to take on further carbon expenditures.



Universal Carbon Allowance

LATENT FUTURE

Tokenized Securities

Business Model

Asset-backed tokens hashed into the blockchain (commonly Ether) with embedded project metadata.

Sharing Economy

Business Model

A future where underutilized assets are monetized as services to those who need them.

- **Digital ID**

Behaviour

A virtual hashed unique identifier that liaises with digital services and holds immutable metadata on the individual.

- **Hard-tech Tracking**

Technology

A network of devices that work together to track various geological phenomena and relay data to the network.

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- **Surveillance Economy**

Business Model

A model whereby we subscribe to the products we use with our consented surveillance rather than money.

Ownership Economy

Business Model

A future where consumers hold stakes in the business they patronize for a passive income.

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Technology

The ability for devices to transact autonomously and securely under a defined protocol.

Perks Economy

Business Model

A model whereby patrons of a business receive not only base products, but lifestyle benefits and access to a closed communal system.



Universal Carbon Allowance

LATENT FUTURE

- **Smart Contract**
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When the costs of carbon taxation are passed from companies to consumers, governments will need to keep a balance sheet of Carbon usage per citizen along with general taxation. To even the playing field, citizens will receive a certain allotment of Carbon Allowance that scales with their income. To manage this, citizens will enlist platforms that track, store and manage their carbon allowance. This allowance can accumulate if the holder maintains a low footprint, and may easily substituted for, or even serve as a form of wealth.



Universal Carbon Allowance SCENARIO

Yashoda is a young professional who works remotely from her rural property just outside the city. She drives an electric car, the forest on her property sequesters 150 tonnes of carbon per year, and her home is powered by solar. She even sells some surplus solar energy back to the local power grid.

Every year her college friends go on a trip one week for the winter. This year while planning her friend Sarah says she can't go. Her mother has been sick and she used her carbon allowance flying home to see her. Carbon is really expensive right now because everyone is buying it for the holidays and she doesn't think it's worth it. Yashoda tells her that she hasn't sold her carbon surplus for the year yet and she'll cover her carbon if Sarah covers the cost of her hotel. Sarah agrees because she gets a really good rate on the hotel through her credit card rewards.

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Carbon Reserve Currency

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With worsening climate change and worsening carbon penalties, avoiding these costs will come at higher and higher monetary value. One day, the value of avoiding these costs may lead to the volume of Carbon transactions surpassing the volume of monetary ones, representing a paradigm shift in primary currency. This will incentivized businesses to accept Carbon as a method of payment for ordinary goods and services. This will incentivize individuals to store the majority of their wealth in carbon (tCO₂e). At this point, the importance of the carbon currency will surpass that of the dollar, or other fiat currencies, and sovereign nations will be incentivized to hedge their reserve funds in carbon, all while the existential threat posed by climate change becomes more evident.



Carbon Reserve Currency

SCENARIO

Jon walks to and from work each day, rather Ubering like some of his other colleagues. He grows tomatoes, fresh basil and cucumbers on his windowsill in his small NYC apartment, and he seldom uses the waste bin. He's not particularly environmentally conscious, nor is he motivated by living a healthy-active lifestyle. Jon's reason for this behaviour is solely affordability.

Jon is planning a vacation to Peru, and the flight alone will cost him 0.04 tCO₂e. By avoiding burning his allowance on rapid transportation and garbage disposal, and by leasing his windowsill to an urban grid-farming co-op, he mines roughly 0.0002 tCO₂e each day.

At this rate, Jon will be able to afford a flight in 6 months, though he expects costs to be slightly higher by then.



