

# Carbon Price Formation

- Establishing a carbon price is one of the top recommendations from economists to tackle the climate crisis. The price signal guides business to the lowest cost climate solutions.
- In countries with a state-based emissions trading scheme, the price is set initially at auction
- In countries with a carbon tax, the state sets the price directly
- Otherwise the voluntary carbon markets rely on buyers and sellers to make the price, based on the following variable factors & measures
- Scroll for examples.

Factor	Detail
Data Procedures (MRV)	Base-lining, monitoring, reporting, verification specifics
Exclusivity / Uniqueness	Avoidance of double-counting of project in multiple jurisdictions
Additionality	Emissions reductions a direct result of project, not incidental
Permanence / Reversibility	Risk of captured CO <sub>2</sub> being lost back to atmosphere
Leakage	Risk of CO <sub>2</sub> emissions activity being re-located not stopped
Ethics, Co-benefits, Harm	Respects communities, biodiversity, and local ecosystems
Transparency	Recorded in transparent, independent, public registry
Market mechanics	Market liquidity, bidding and settlement influences

# CO<sub>2</sub> Emissions Data Quality

Detail	Description
Baseline setting	Establishing a credible, scientifically rigorous emissions scenario with local, compatible data on which to base actual emissions reductions
Monitoring	Effective measurement of emissions
Reporting	Regular reporting to designated third party organisation
Verification	Regular checks on validity of all of the above by third party independent organisation
Example	A low quality carbon project would claim unrealistically high regional deforestation rates, overestimating the baseline that the project's impact is measured against
Example	A project's carbon credits would be valued less if the project has no independent verification of the emissions reductions it claims

# Exclusivity or Uniqueness

Detail	Description
Consideration	The emissions from a project should only count once across all markets, time-frames and boundaries.
Risk	Double-counting: the carbon credits from a project are effectively sold twice or more times. This erodes trust in the project, reduces the number of willing buyers, impacts the price achieved and discourages investment in similar projects.
Example	The fossil fuel emissions avoided by a renewable energy project in a certain nation are sold to a corporation but are also used by the nation to count towards its national climate targets with the UNFCCC.
Example	A carbon credit project provides emissions reductions for a state's emissions trading scheme, but also sells the carbon credits on the voluntary carbon market to a private corporation.

# Additionality

Detail	Description
Consideration	Would the CO <sub>2</sub> reduction happen, even if the project did not occur?
Risk	If a carbon credits project is initiated but has additionality problems, i.e. the CO <sub>2</sub> reductions promised will occur anyway, then the credits do not actually represent CO <sub>2</sub> emissions reduction. The carbon price will be reduced as fewer participants are willing to buy.
Example	A hydro-power project in a region where hydro-power is the cheapest option cannot earn high quality credits for displacing a fossil fuel power-station which would never have been built.
Example	Methane capture at landfills could earn carbon credits, but when the local landfill regulations stipulate methane capture systems anyway, the issuer could only generate low quality credits
Example	A steel mill installing more energy-efficient equipment could not issue high quality credits if the upgrade would pay for itself through energy savings even without carbon credits

# Permanence (Reversibility)

Detail	Description
Consideration	Durability: CO <sub>2</sub> emissions reductions are permanent
Risk	Captured CO <sub>2</sub> could be lost back into the atmosphere. Carbon credit purchasers would consider their credits devalued or worthless.
Example	Geological carbon storage (mineralisation) and biochar lock away the CO <sub>2</sub> for centuries or more
Example	Forests can burn, peatland can be degraded
Example	Tree-planting projects by inexperienced operators can result in 100% failure of trees to reach maturity
Example	Soil carbon projects without safeguards against land-use change can result in the land losing all sequestered carbon

# Leakage

Detail	Description
Risk	CO <sub>2</sub> emissions activity may be re-located, not stopped. Fewer buyers would come forward as the promised CO <sub>2</sub> emissions reductions did not actually occur. This results in lower prices, if the credits can still be sold.
Example	Forest protection projects in otherwise unprotected forest regions will only displace logging into adjacent areas. High quality credits would need to demonstrate wider levels of protection.
Example	If putting land under protection prevents local people from farming, they will be forced to farm in other areas which will then suffer. The result is no net emissions reduction.
Example	A livestock farm captures methane from manure and sells carbon credits. If it makes the farming more profitable, this will lead to an inevitable increase in farms and farm sizes and the additional emissions could negate those captured.
Example	A hydro-power project claims carbon credits for avoiding fossil fuel power generation. The dam floods a large forested area and causes massive methane emissions from decomposing organic matter.

# Ethics, Co–Benefits and Harm

Detail	Description
Consideration	Respects communities, human rights, biodiversity, and local ecosystems
Risk	Impacts local communities, causes displacement or land conflicts, impacts biodiversity conservation efforts
Example	A large-scale afforestation project that makes use of mono-cultures of non-native tree species will damage local biodiversity levels
Example	“Land grabs” often occur where local people are forced off land to allow carbon credits project to operate, especially in less developed nations where the local people have little or no access to legal protections
Example	Local populations e.g. villagers and farmers, can be tricked into giving up rights to land and resources in return for comparatively large sums of money from the carbon credit income that is never actually forthcoming
Example	When a carbon project verification agency is owned by the carbon exchange selling the carbon credits, a conflict of interest arises because the carbon exchange has financial incentives to ignore its verification standards in order to sell more credits.

# Transparency

Detail	Description
Consideration	Carbon credit projects need to be recorded in transparent, independent, public registries
Risk	Lack of clear information, accountability or proper disclosure raises legitimate concerns
Example	A rainforest conservation project not publicly disclosing its baseline deforestation rates or its monitoring methodology makes rigorous verification impossible
Example	A wind farm in a country with an authoritarian regime avoids undergoing external audits by foreign auditors. Self-reporting of emissions avoided cannot be verified.
Example	A mangrove restoration project sells credits to multiple buyers multiple times with no clear accounting provided. The total carbon credits on the market add up to more than the CO <sub>2</sub> sequestered.
Example	A carbon credit registry which does not allow public scrutiny of project details or credit retirements makes it very difficult to validate true rates of CO <sub>2</sub> emissions reduction or sequestration.

# Market Mechanics

Detail	Description
Market liquidity	Liquid markets allow participants to buy and sell with ease at prices close to the quoted price. Illiquid markets tend to result in poor prices and uncertainty with lengthy delays for trade execution.
Bidding	Prices are primarily set by the bids and offers from market participants looking to buy or sell carbon credits.
Settlement	Price means nothing unless an agreed trade is actually settled at the price agreed between the buyer and the seller, and each has their account adjusted accordingly.
Carbon Exchange	The market operators, i.e. the carbon exchanges, generally put great store by their ability to guarantee the execution and settlement of trades for their participants. They compete with other exchanges to publish the most reliable and timely price data.