

Commercial applications of remote sensing opportunities within carbon markets

EO for Carbon Markets Forum 2023 – European Space Agency

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A framework for carbon markets

Carbon Tax – Regulators directly set a price on carbon by defining an explicit tax rate on emissions

PROS: Stable carbon prices spare companies from fluctuating regulatory costs; levies discourage from polluting even if the abatement cost is cheap

CONS: A tax may be regressive and is hard to accept politically

Command & Control – Regulators set the amount and the way to abate emissions, no reference to carbon price

PROS: Straightforward to implement. Advocates suggest it could be the fastest way to mitigate emissions

CONS: Its coercive nature offers limited flexibility on how to reduce pollution and has no incentive to go beyond any predefined limit

Market-based – Market forces define the optimal carbon price consistent with regulators' abatement target

PROS: It sets a predefined target for emissions reductions and tracks progress.

CONS: Complex and costly to implement; price uncertainty may weigh on emitters investment decisions, unless regulators enhance its design

Cap & Trade

Penalty-for-emitting. Regulators set an upper limit on emissions and distribute **allowances**, freely and via auctions, which must be later surrendered for each ton of emissions (EU ETS, CQCTS, CNETS)

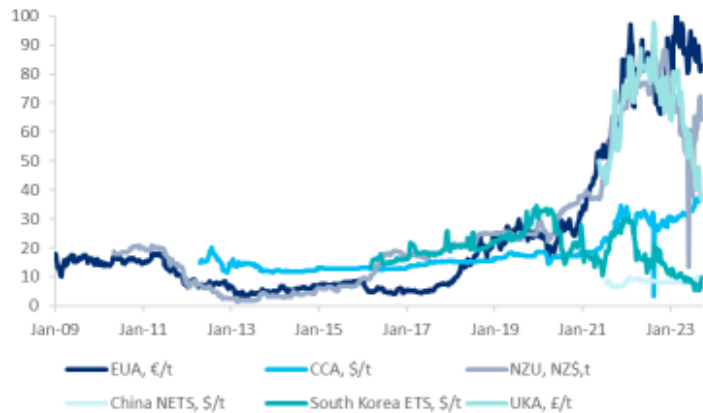
Offsets

Emitters that reduce or compensate their emissions are rewarded with **credits** that can be monetized by exchanging them with allowances or selling them to other polluters in deficit. Carbon offsets markets can be international (UN CDM), national (CCOP), and independent (VCM)

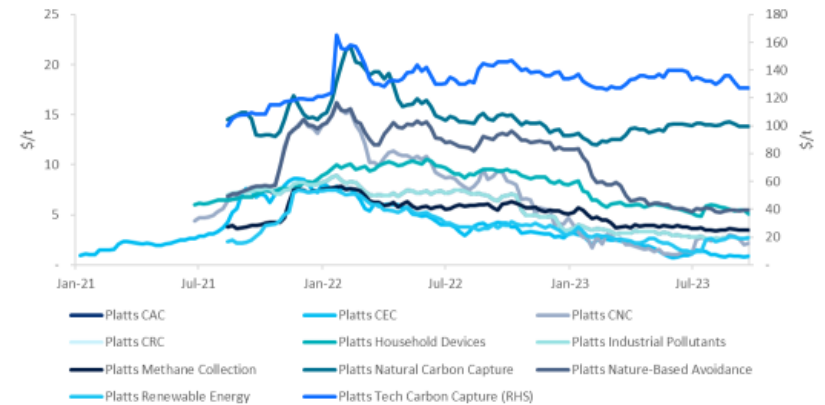
Poor information is a hurdle for the growth of carbon markets

Given the geographical and legislative fragmentation of carbon pricing initiatives, there is no unique carbon price; efforts to create one under the Kyoto Protocol failed. The experience of the EU ETS is encouraging others to implement their own ETS. Art. 6 would promote an international offsets market, but poor information is a hurdle.

Price performance of allowances under selected cap & trade pricing initiatives around the world



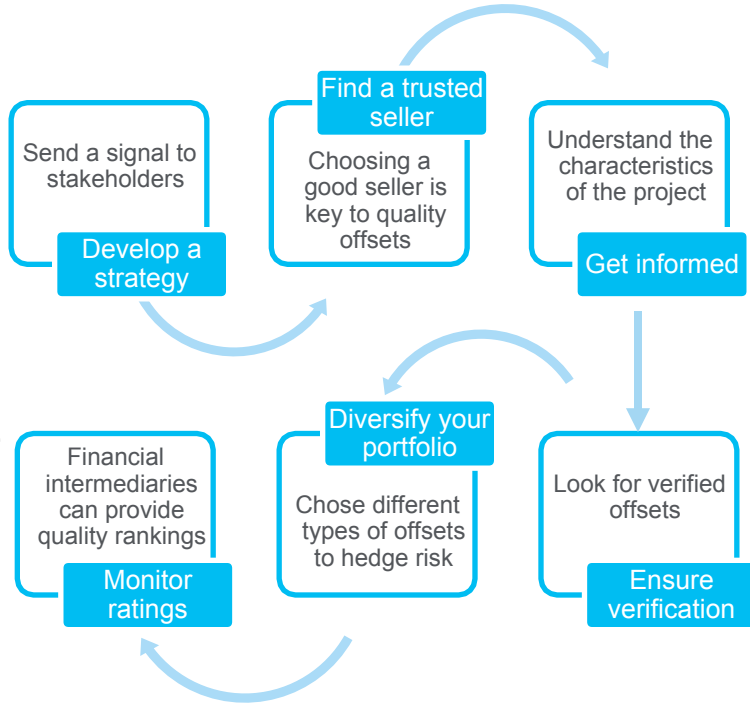
Offsets prices are affected by idiosyncratic factors such as investors' preferences for registry standards, the vintage year, the size of the transaction itself, the geography and the category of the projects, as well as the additionality of co-benefits



Despite criticism, VCM are a critical piece of the Net-Zero puzzle

VCM can help companies achieve climate targets while also raising funds for developing economies. Yet, to succeed, it needs to mature and develop into one that is more transparent, easier to navigate, and provides certainty to buyers that what they are purchasing is of high quality that reduces, avoids, or removes emissions.

Recommendations for Navigating the VCM



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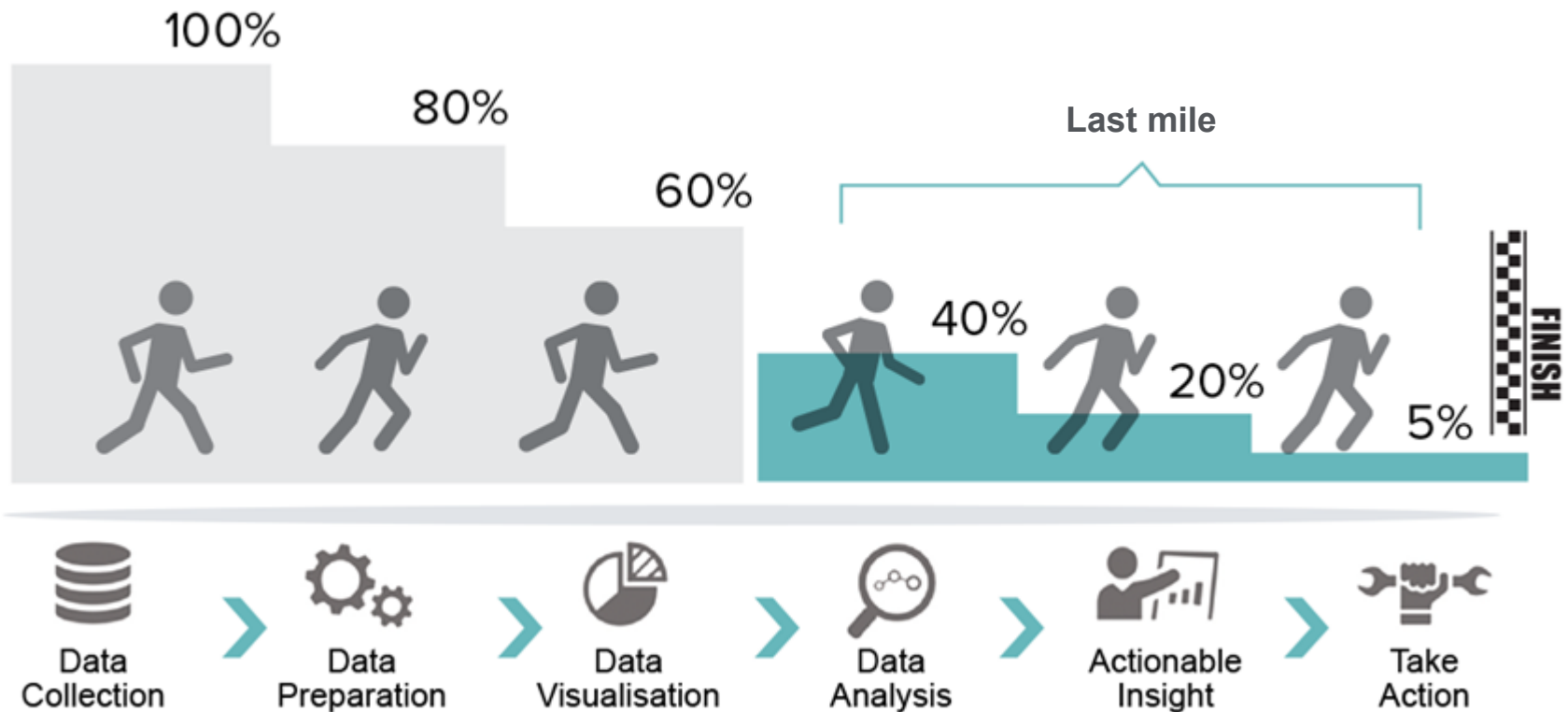
N-GEO prices. Over the last few years, the VCM has come under intense scrutiny by environmental activists, the media, and academia, claiming it is not effective at reducing emissions and that the market encourages companies to rely on green washing rather than reduce their own emissions



The role of remote sensing within climate strategies

By monitoring changes in GHG concentrations over time, the scientific community, policymakers, and commercial entities can promptly assess the effectiveness of environmental initiatives, predict future trends, and plan resilient strategies to mitigate risks associated with climate change.

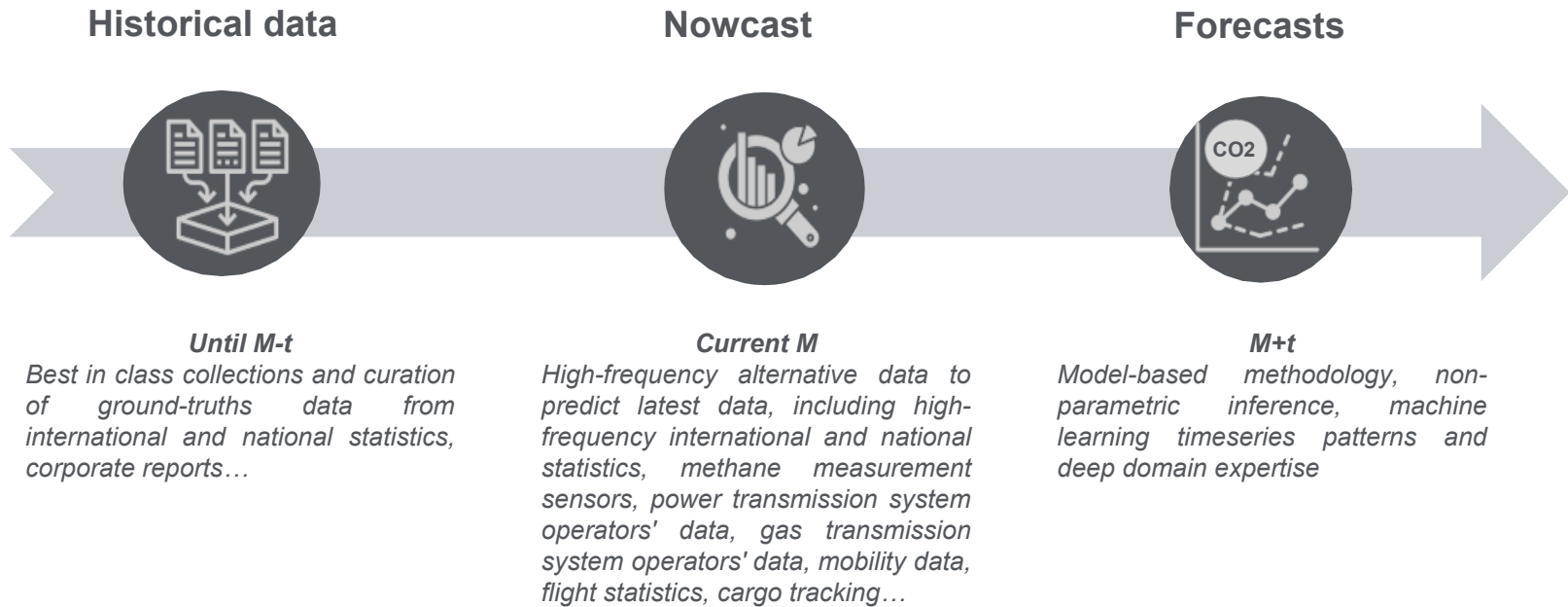
Emissions analytics marathon



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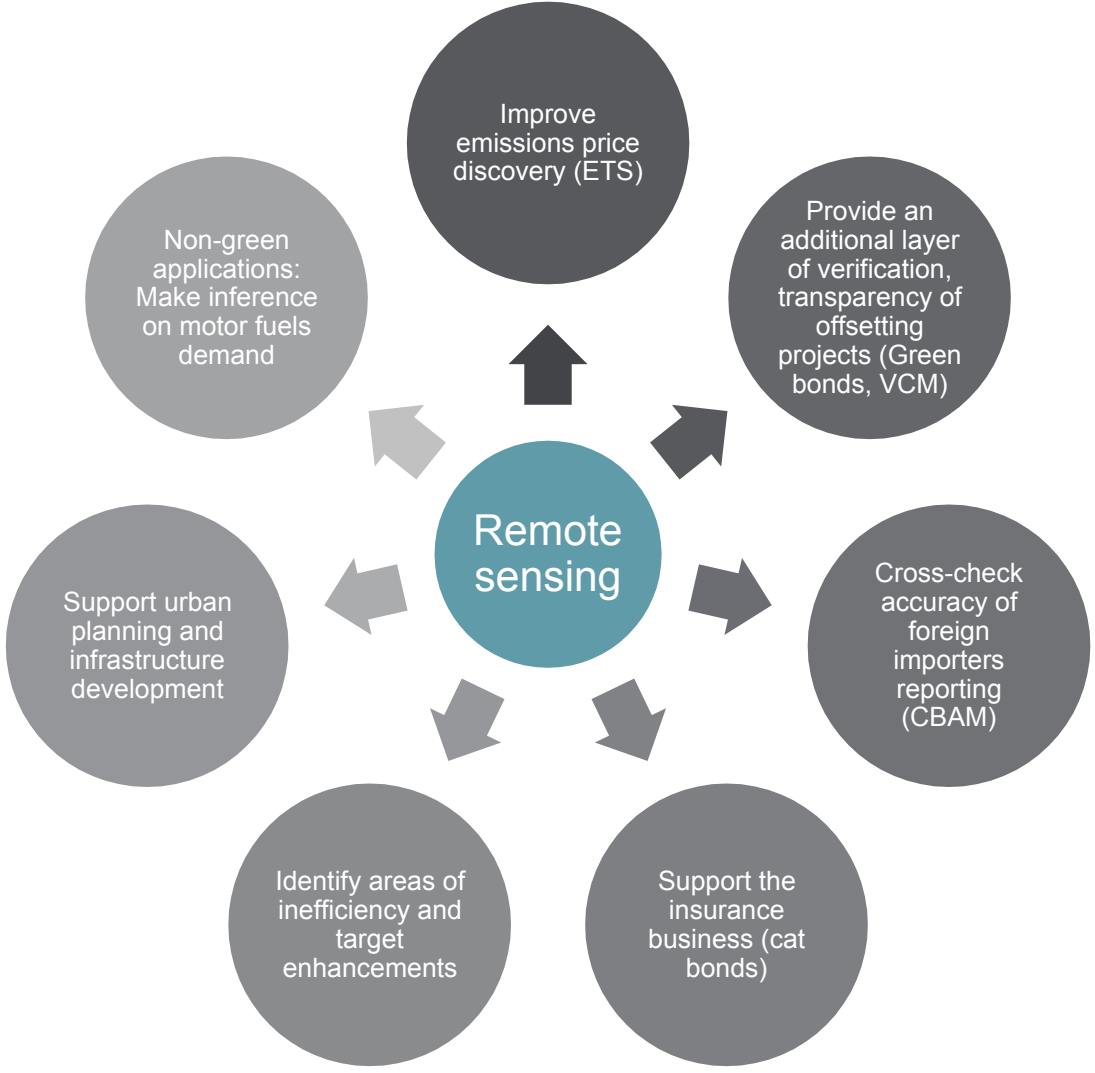
Trinity of timeseries data in emissions analytics

Sequential approach to optimize accuracy and timeliness of data. Historical data forms the base layer foundation, high frequency data supports the prediction of 'now' while nowcast+ builds on the current month nowcast to construct a forward perspective.



A wide range of commercial opportunities

Remote sensing could have a wide range of commercial opportunities, which could allow stakeholders to make more informed decisions, including but not limited to optimization of the operations. Yet, remote sensing alone is no guarantee of a successful commercial product but needs to be integrated with AI-driven analytics



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