

INTRODUCTION TO CARBON COST OPTIMISATION



CARBON COST OPTIMISATION

A PRICE ON CARBON

Australia's Carbon Pollution Reduction Scheme (CPRS) is scheduled to commence on the 1st of July 2010. The goal of the scheme is to transform Australia's economy and encourage investment in projects that reduce Australia's carbon footprint.

In this new carbon-limited economy, all Australian households and businesses will be affected by higher energy costs. Carbon intensive businesses will be more directly impacted as liable businesses under the scheme.

The Government will create a limited and reducing number of carbon pollution permits each year that will reflect Australia's overall cap on emissions. Liable businesses will be required to acquire permits for all of their emissions. These permits will be auctioned by the government and then will also be able to be bought and sold on an open market.

While some permits will be issued for free to Emissions-Intensive Trade-Exposed (EITE) industries, this will only be a transitional arrangement.

The effect of these changes will be to place a clear and increasing price on carbon and to require Australian business to become more efficient; producing more with lower emissions.

UNDERSTANDING THE OPTIONS - ABATEMENT AND OFFSETS

The transition to a low-carbon economy will be disruptive. While we still don't know the speed and depth of cuts in Australia's emissions, it's clear that the introduction of the CPRS will be a challenging time for Australian business.

To respond to these challenges effectively, liable businesses will need to understand their current and forecast carbon emissions and will need to develop an efficient strategy for balancing their carbon liability and meeting their compliance requirements under the scheme.

This strategy will be an investment decision with two main options: Firstly, a business can invest in

internal abatement projects to reduce their carbon emissions; secondly, they can purchase offset mechanisms to surrender against their emissions. These offset mechanisms may be pollution permits issued by the government or they may be credits for abatement measures, taken by third-parties, such as CERs.

Abatement Projects

Abatement projects are projects a business undertakes to reduce its carbon footprint. Abatement project opportunities are analysed using a marginal abatement cost curve to find the financially optimal point of investment. The cost of an abatement project is calculated in relation to a base case or reference solution. Abatement projects may have a negative cost, because they have other benefits such as a reduction in energy use.

The cost of carbon will vary within a business for two reasons: Firstly, different projects and assets will have different average costs of internal abatement; secondly, if those business areas operate outside of Australia they will be subject to different compliance requirements.

CALCULATING THE COST OF CARBON

The two key measures a business needs to establish as part of carbon cost optimisation are its Weighted Average Cost of Carbon (WACCO2) and its Carbon Intensity. These need to be calculated for the current year and forecast for future years. They also need to be calculated for each major operating asset and for expansion projects.

Carbon intensity is a ratio that combines significant financial and non-financial organisational measures with carbon emissions. The expression of carbon intensity will vary by business, but it may be, for example, tCO2e per AUS\$1000 of EBIT, tCO2e per customer, or tCO2e per terrajoule of energy produced.

The **Weighted Average Cost of Carbon** (WACCO2) expresses how much an organisation or asset is expending to either reduce carbon emissions internally (abatement) or offsetting



PERMIT AUCTION PROCESS

The Australian Government's preferred method of distributing carbon permits is by ascending clock auction.

In an ascending clock auction the auctioneer announces the current price. Bidders indicate the quantity of permits they are prepared to purchase at that price. If demand exceeds supply, the auctioneer raises the price in the next round and bidders resubmit their bids. This process continues until such time as the quantity offered is equal to or greater than demand. Bidders then pay the price from the previous round.

Greensense provides carbon permit auction planning, training and simulation services.

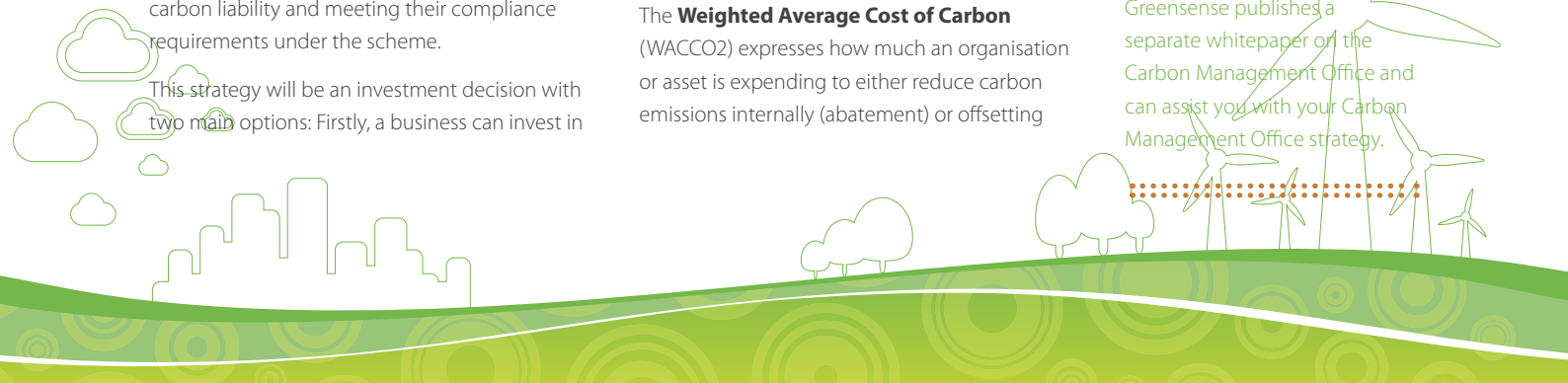


CARBON MANAGEMENT OFFICE

A Carbon Management Office is a multi-disciplinary centre of excellence charged with managing the carbon emissions of an organisation. The Carbon Management Office has four core functions:

- Accounting
- Reporting
- Processes
- Performance

Greensense publishes a separate whitepaper on the Carbon Management Office and can assist you with your Carbon Management Office strategy.



externally. It equates to the cost a company incurs to balance 1 tonne of carbon emissions.

The calculation of WACCO2 is based on a number of factors including:

- Carbon footprint
- Offset inventory (credits and permits)
- Abatement project portfolio
- Credit market data
- Permit auction data

To add to the challenge, WACCO2 and Carbon Intensity will change constantly, influenced by factors such as business strategy and external market forces. Furthermore, it is likely that auctioning of permits will occur at least quarterly and potentially more frequently, making it essential that these measures are reviewed at least as frequently to ensure the correct auction strategy is developed.

This continual review and reforecasting of carbon liability, carbon intensity and WACCO2 is essential but has the potential to come at a cost for businesses, particularly those without adequate methods and tools to support the process.

CARBON COST OPTIMISATION

When the Carbon Pollution Reduction Scheme comes into effect, businesses will be faced with a complex set of interrelated questions.

- Which abatement projects should I invest in?
- What is my strategy for carbon permit auctions - what volume of permits should I bid for, at what price, and for which permit vintages (what is my demand curve)?
- What offsets should I purchase at what price?
- When should I surrender my permits and credits to meet my compliance requirements?
- At what price should I sell my permits and credits?
- Given my forecast WACCO2, should I invest in a given expansion project or has the viable life of my assets changed?

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Lifetime Emissions Optimization

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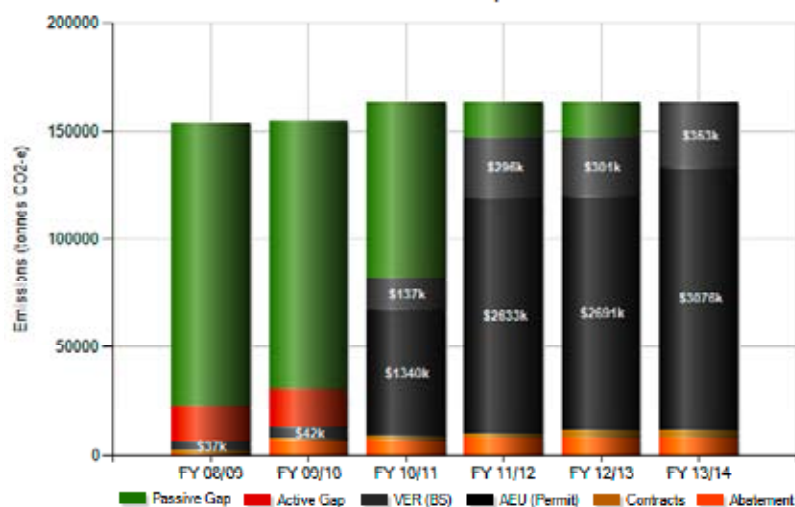


Figure 1: Example of an optimised carbon management strategy. Source: CarbonNavigator™

To answer these questions, businesses will need the right organisational model and the right tools and processes.

Greensense recommend establishing a Carbon Management Office to take responsibility for meeting compliance requirements; maintaining the corporate carbon inventory; managing and optimising the cost of carbon; managing the abatement project portfolio; and acquiring, selling and surrendering permits and credits.

Greensense can help your business to establish a Carbon Management Office and to implement the right tools and processes to optimise the cost of carbon.

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CARBON MANAGEMENT TOOLS

Many businesses are now aware of the need to implement Carbon Inventory Management Software to manage their carbon footprint.

Greensense work with CarbonNavigator™, a product focused on the Australian regulatory environment that provides inventory management but with the additional focus on cost optimisation.

CarbonNavigator™ models the most cost effective carbon management strategy for a business and includes specific guidance on auction strategy including what volume of permits should be acquired and at what price.

Scenario modelling is supported, allowing a business to test assumptions, vary inputs and come to "what if" comparisons.



Greensense was founded to help organisations respond to the challenges of a carbon limited economy. Our mission is to tackle climate change by helping businesses engage with their employees and reduce carbon emissions.

We provide a range of services related to carbon management, including:

- Climate change strategy and planning
- Carbon cost optimisation
- Carbon pollution permit auction preparation
- Employee engagement, education and innovation management
- Carbon inventory management (including software solutions)
- Management, operational and regulatory reporting of emissions and performance
- Supply chain planning and contract reviews and guidance
- Emissions abatement project planning and management
- Carbon Management Office planning, implementation and support

Greensense services are framed by the concept of the Carbon Management Office – a multi-disciplinary centre of excellence charged with managing the carbon emissions of an organisation.

CONTACT US NOW TO DISCUSS YOUR CARBON COST OPTIMISATION STRATEGY

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Greensense
Making sense of climate change

