

EXPLORING SCENARIOS FOR SUPPLY CHAIN CARBON REDUCTION

Case Study - Food & Drink Supply Chain

The Problem

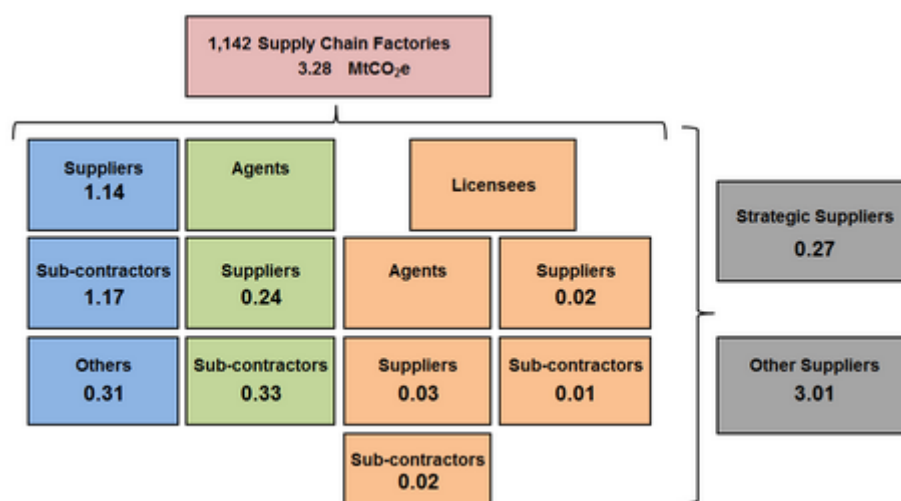
With climate change already making its impact felt, there is an urgent need to act - to keep global warming to about 1.5°C or face impacts over the coming decades. Following the Paris Climate Change Treaty at COP21 there is the expectation on businesses to go beyond an incremental approach to carbon reduction. Investors and other stakeholders are concerned that companies may not be addressing the bulk of their greenhouse gas emissions, which may be with the supply chain.

'Greenclick'

Greenclick is a system that finds energy and other savings. For example, tell Greenclick the location of a factory and what the factory makes and it will return an estimate of the energy used at the factory plus where and how much energy can be saved at the equipment level. The Greenclick approach involves simulation of each site down to the level of equipment. The simulations are based on proprietary methodology and use open source information. Greenclick is not restricted to a single site and can be also used across multiple supply chains. It can be used for other resources, such as water.

Case Study

This case study is of a food and drink supply chain comprising 1142 supplier factories. The Head of Supply Chain (HoSC) has identified 114 sites as being strategic suppliers. The other 1028 suppliers comprise tactical, operational and commodity suppliers. The supply chain is international, with supplier factories in different countries.

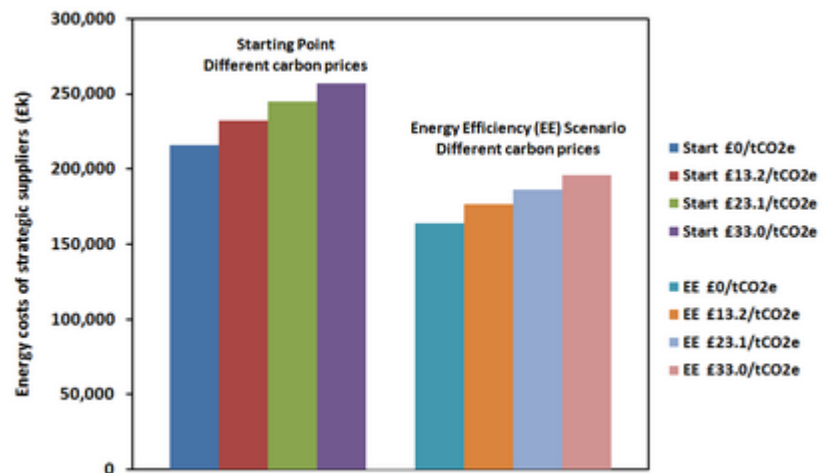


Supply chain CO₂e map

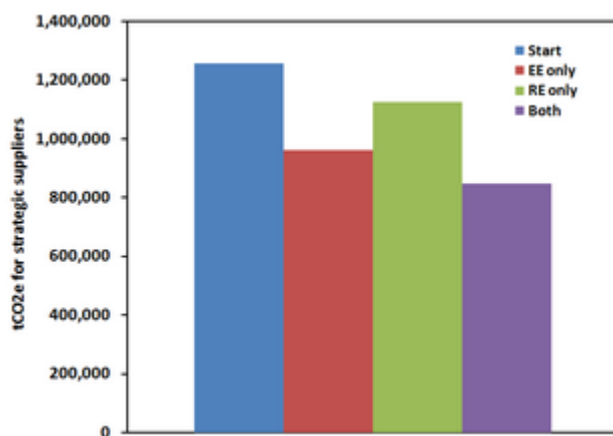
The map of CO₂e emissions associated with energy use through the supply chain is shown above. The supply chain has three channels: (1) direct, (2) by agents, and (3) by licensees. Suppliers in the direct channel (shown blue) are either contracted directly by the HoSC or subsequently sub-contracted through various tiers. Strategic suppliers exist in all of the channels. Each factory is simulated separately.

What If? scenarios

What If? scenarios can be investigated and used to evaluate cost and carbon strategies before they are implemented. Renewable energy RE scenarios in the supply chain can be combined with energy efficiency EE scenarios and explored also with scenarios with carbon pricing as well as tariff and contractual arrangements at each supplier. The figure on the right shows comparison of the energy costs for the 114 strategic suppliers for scenarios of energy efficiency (EE) under different carbon pricing regimes.



The carbon prices have been taken from CDP's *Carbon Pricing Pathways* and correspond to the start, middle and end of the 'operational regime' defined in that report. The EE measures that have been modelled in the supplier factories are ones which are incremental changes as well as those which require changes to processes and controls with relatively low capex. The EE cost savings in £millions in the strategic suppliers correspond to 52 (with £0/tCO2e), 56, 58, and 61 under the four carbon pricing regimes. With structural changes and redesign of products significantly greater levels of EE cost savings can be achieved.



Benefits

Greenlick allows you to see energy use at every supplier and know how much energy may be being wasted and what can be done about it.

By making energy use, CO₂e and energy savings visible, the Greenlick approach can be used to develop a more collaborative approach through the supply chain. This can lead to the creation of shared resource efficiency gains and better business performance.

Scenarios for carbon savings

The estimated CO₂e from energy use by the strategic supplier factories under different scenarios (EE only, RE only, EE plus RE) is shown in the bar chart to the left. In the case of a scenario in which the suppliers implement no energy efficiency (the RE only scenario), some of the green electricity is used to compensate for energy that is being used inefficiently. In this scenario, the average RE substitution from grid supply is 30% of the electricity used (with no RE heat).

Further information on Greenlick

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