

Special feature

## Domestic tradable quotas

### Introduction

Domestic tradable quotas (DTQs) are a proposed policy instrument to reduce greenhouse gas emissions from energy use under which the end-purchasers of energy surrender emissions rights. DTQs were proposed by Dr David Fleming, a London-based policy analyst, who first published the idea in 1996.<sup>24,25,26</sup>

### Description of DTQs

DTQs can be broken down into the following elements: (a) setting the carbon budget, (b) surrendering carbon units, and (c) acquiring carbon units.

#### a. Setting the carbon budget

The carbon budget is the maximum quantity of greenhouse gases that the nation can emit from energy use during any given year. Carbon budgets are reduced year-on-year so as to meet nationally and internationally agreed emissions targets. Each budget is divided into carbon units, with 1 carbon unit representing 1kg of carbon dioxide equivalent.

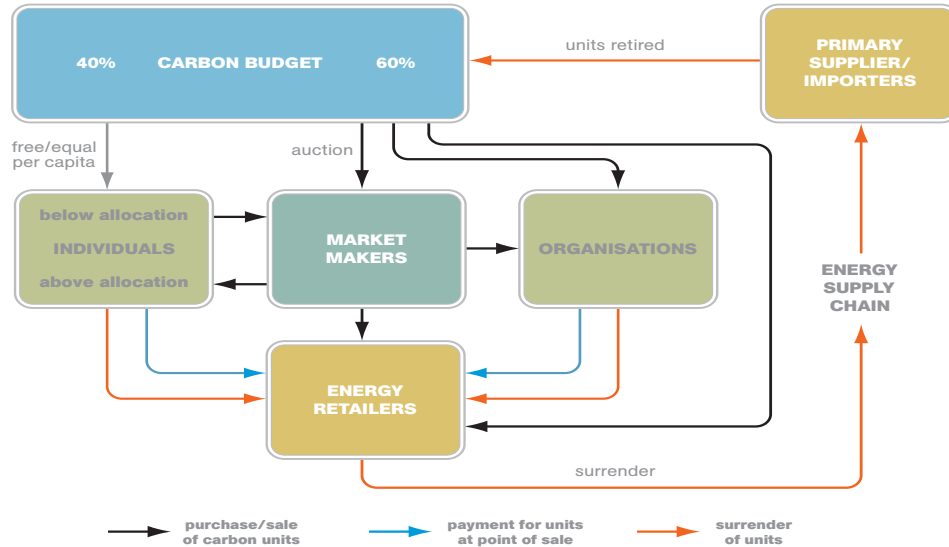
#### b. Surrendering carbon units

Fuels and electricity are assigned a carbon rating based on the quantity of greenhouse gases (measured in carbon units) emitted by the combustion of a unit of fuel and the generation of a unit of electricity. When individuals and organisations purchase fuel or electricity, they surrender the number of carbon units corresponding to their purchase. For accounting purposes, these units are passed up the supply chain and on reaching the primary energy producer or importer are, surrendered back to government.

#### c. Acquiring carbon units

Individuals eligible for units receive them free and on an equal per capita basis. The proportion of total carbon units allocated to individuals is equal to the proportion of total energy emissions arising from individuals' purchase of fuel and electricity (currently around 40% in the UK.) Individuals may purchase additional units on a national carbon market and organisations are required to purchase all of their units on the carbon market. The carbon market consists of primary sellers, final buyers and intermediaries who facilitate trading between them.

Figure 29  
Carbon unit flows under DTQs



<sup>xii</sup> A market maker is a trader in a goods or securities market who holds a stock of the good or security and is willing to buy and sell at pre-announced prices, thus "making a market".

Primary sellers are the Government and below-average emitters.

- Government: Those units not included within the entitlement are sold onto the market via a government auction.
- Below-allocation emitters: These are individuals who emit at a level below their initial allocation of units and can sell surplus units onto the market.

Final buyers are organisations, above-allocation emitters and overseas visitors.

- Organisations: Organisations requiring very large amounts of units can buy at the government auction but most will buy from market makers.
- Above-allocation emitters: Some individuals will wish to emit at a level above their initial allocation. To do so, they must buy further units on the market.
- Visitors: Overseas visitors are not allocated units and must purchase them on the market.

The intermediaries are market makers<sup>xiii</sup> and energy retailers.

- Market makers: The government auction involves a limited number of market makers bidding for units. Market makers also buy units from below-average emitters. Units are then sold on to final buyers or energy retailers. Market makers will buy units at a lower and sell at a higher price, making their profit from this bid and offer spread. (It is anticipated that high street banks and post offices would act as market makers.)
- Energy retailers: Customers without units (e.g. overseas visitors, eligible individuals who have surrendered all their units, etc.) can purchase them from energy retailers at the point of sale. For example, when the customer buys petrol, the retailer will provide

the units needed to cover the purchase and charge the customer for them. (Retailers buy units either from market makers or, if buying in very large quantities, at the auction.)

Eligible individuals and those organisations that buy units from market makers have a carbon account within an electronic registry. Units can be surrendered from a registry account in two ways. When paying utility bills, units are surrendered by direct debit, and when paying for fuel at garages, units are surrendered by means of a "carbon card" which allows the customer's account to be debited of units. Figure 29 illustrates how units are acquired and surrendered.

Individuals who do not wish to manage their carbon account can simply arrange for a market maker (for instance, their bank) to automatically buy their units as soon as they receive them. They can then buy all units they require at the point of sale. Therefore they do not have to transact in carbon units but can transact purely in cash, transforming their experience of DTQs into that of a carbon tax.

### Equity – are DTQs fair?

#### DTQs and distributive justice

There is increasing political support for allocating emissions rights on an equal per capita basis. However, rarely is a justification for this position offered that draws upon the (substantial) literature on distributive justice. Whilst it would be straightforward if support for an equal per capita allocation were found within all of the approaches to distributive justice, this does not appear to be the case. For instance, whilst there is considerable support for this allocation from liberal egalitarian and from left libertarian approaches, support is not forthcoming from the right libertarian approach. Hence, to justify an equal per capita emissions system one has ultimately to justify an approach to distributive justice that supports such an allocation.

### Who gets carbon units?

The relevant considerations here are age, residential status and (perhaps) institutional living. It is argued that children should not receive units as they do not purchase energy. However, the age of eligibility for units is not straightforward. Allocating to those 18 and above would disadvantage those 16 and 17 year-olds living independently. However, making 16 the threshold age would provide a windfall for the large number of 16 year-olds who live with their parents and don't buy energy. British citizens and others permanently resident in the UK will receive units, whilst those visiting the UK for short periods will not.

A decision regarding eligibility would need to be made with regard to those individuals who fall between these two ends of the spectrum. And how strong should an individual's ownership of units be? For instance, should a long-term stay in an institution (hospital, care home, prison) mean that an individual has to hand over (a proportion of) their units to that institution?

### Protecting those on low incomes

Whilst equity may demand that carbon units are allocated between adults on an equal per capita basis, it also demands that allocating units in this way does not make those on low incomes worse off. If emissions were directly proportional to income, then allocating emissions rights on an equal per capita basis would, in fact, make all those on low incomes better off, for, as below-allocation emitters, they would have surplus units that they could sell onto the carbon market, earning themselves additional income.

However, while it is true that emissions rise on average across the income deciles, not everyone within the deciles emits at the 'decile average'. Work by the Policy Studies Institute<sup>27,28,29</sup> has shown that there is a wide variation in energy use and emissions within deciles and that some 30% of households in the lowest two income deciles are currently above average-emitters. Hence, if DTQs were implemented today, these households would be worse off as they would have to buy additional units on the market to cover their above-average emissions.

Bringing down the emissions of these households to an average or below-average level would ensure that they would not be disadvantaged by DTQs. This could be done by building on existing Government programmes for fuel poverty and for taking measures to reduce the need to use private transport in rural areas.

### Additional units for parents?

If children themselves are not entitled to carbon units, then should parents be allocated additional units for their children? We argue that if measures are implemented to bring the emissions of all households in the lowest

income deciles to an average or below-average level, then most households, including those with children, will be better off (and none will be worse off) without additional units being allocated.

### Effectiveness – can DTQs meet emissions reductions targets?

In theory, emissions trading schemes such as DTQs are effective as they set the level of emissions directly. However, in order for DTQs to be effective in practice, the scheme needs to be technologically and administratively feasible and acceptable to the public.

### Technological and administrative feasibility

The requirements of a DTQs scheme include:

- Building and maintaining a secure carbon database capable of holding carbon accounts for individuals and organisations
- Opening and managing accounts for individuals and organisations
- Issuing and reissuing carbon cards to individuals and organisations
- Developing, installing and maintaining systems that enable the surrender of carbon units by carbon card and by direct debit, that allow both remote and over-the-counter trading of carbon units, that enable carbon statements to be obtained and that allow the online and over-the-counter transfer of carbon units between accounts
- Being able to accurately carbon-rate various electricity mixes

Research suggests that the above requirements can be met. Given limits on space just one of these is discussed below.

### Enrolment and identity fraud

For a DTQs scheme to operate successfully, Government must be able to open a carbon account and provide a carbon card for over 45 million people while ensuring that fraudsters are not able to open more than one account.<sup>xiii</sup> The planned ID card scheme aims to verify people's identity to a very high level of assurance. Hence, basing DTQs on a successfully implemented ID card scheme would virtually eliminate the possibility of multiple applications for carbon accounts. However, given the various uncertainties surrounding the ID card scheme, it is important to consider how DTQs could be implemented in its absence.

One option would be to consider using electronic verification, i.e. allowing people to enrol online or over the phone using existing databases to verify identity. This would dispense with the need for the majority of individuals to produce relevant documents at, say, a local post office or post them to a relevant authority.

<sup>xiii</sup> There are approximately 48 million people in the UK aged 16 and over and approximately 46.5 million people aged 18 and over

### Public acceptability

A DTQs scheme is more likely to gain public acceptance if it is (1) regarded as fair (2) sufficiently easy to understand and (3) sufficiently easy to use.

### Fairness

The fuel protests of 2000 illustrated the public antipathy that can arise in response to even small rises in the price of fuel. DTQs may provide an opportunity to mitigate such antipathy through the explicit inclusion of individuals in the task of emissions reduction. Rather than confronting individuals with higher prices, DTQs actively enlist them as environmental stakeholders through the direct allocation of emissions rights. Moreover, individuals are made equal stakeholders through the equal per capita allocation of these rights. If the public perceives this equal allocation to be broadly fair, this is likely to contribute significantly to support for DTQs.

### Understanding the scheme

Given that DTQs would take time to implement, once a decision had been taken to do so, there would be a substantial period over which government could explain the various aspects of the scheme. Over time it is likely that, as a result of learning-by-doing, most people will come to understand the scheme. However, understanding the scheme is not a prerequisite for using it. Those individuals who cannot understand or simply do not wish to transact in carbon units, can sell all their units immediately upon receipt and buy all units at the point of sale.

### Using the scheme

For those who wish to transact in carbon units, the process of surrendering units (carbon card or direct debit) is convenient and familiar. Options for trading units - trading online, over the phone or over-the-counter at banks and post offices – are again familiar. To properly manage their carbon account, individuals will need regular statements. It is assumed that it would be too expensive for the Government to post out tens of millions of statements each month. However, statements could be accessed online and could be obtained over the counter at banks, post offices and garages. It would also be possible to install terminals in these locations that printed statements on the insertion of a carbon card.

### Efficiency – can DTQs reduce emissions cost-effectively?

What would be the set-up and running costs of a DTQs scheme? Costing large IT projects such as DTQs is not an exact science, even for experts! For instance, the Government's estimates for the cost of the ID card scheme have recently risen from a range of £1.3–3.1 billion to £5.8 billion whilst some experts are suggesting a range from £10.8 to

£19.2bn.<sup>30,31,32</sup> Given that DTQs require further technical specification no costing has been attempted. However, whilst DTQs will have a significant cost, it is arguably not so large in public policy terms. For instance, the scheme will undoubtedly be less expensive than the Government's proposed road charging scheme which has set-up costs estimated at between £10-62 billion and annual running costs estimated at £5bn.<sup>33</sup>

### DTQs and EU ETS

Even if it was agreed that DTQs constitute the ideal cap and trade scheme, the scheme could not simply be parachuted complete into an empty policy space. Since the beginning of 2005, the European Union Emissions Trading Scheme (EU ETS) has been in operation and, hence, if a DTQs scheme is to be implemented, it is important to explore ways in which the EU ETS might evolve into a DTQ scheme.

Under the EU ETS, emissions rights are currently surrendered by emitters, whereas under DTQs, emissions rights are surrendered by energy end-purchasers. However, there is a considerable overlap between these two groups as it is only in the electricity sector that end-purchasers are not actually emitters.

Excluding the electricity sector, all emitters in the energy sector are included within DTQs. By contrast, excluding the electricity sector, the EU ETS includes only large industrial emitters and no individual emitters. If the EU ETS were to be expanded by gradually including more and more emitting organisations and then by including individuals, then (excluding the electricity sector) the participants in the two schemes would be identical. To complete the transformation from the EU ETS to DTQs, it would be necessary to change the entities in the electricity sector that surrender emissions rights from power stations (emitters) to electricity customers (end-purchasers). Hence, if DTQs is a sufficiently powerful idea, then there is an evolutionary route that could be taken to realise the scheme.

### Conclusion

DTQs fare well when assessed against the 3 E's – equity, effectiveness and efficiency. Whilst further research is clearly needed into the detail of DTQs, the scheme should not be regarded as simply a blue sky proposal but as a credible public policy option.