



Europe Economics

Participation in the EU ETS markets

A report for DG CLIMA

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1 Introduction

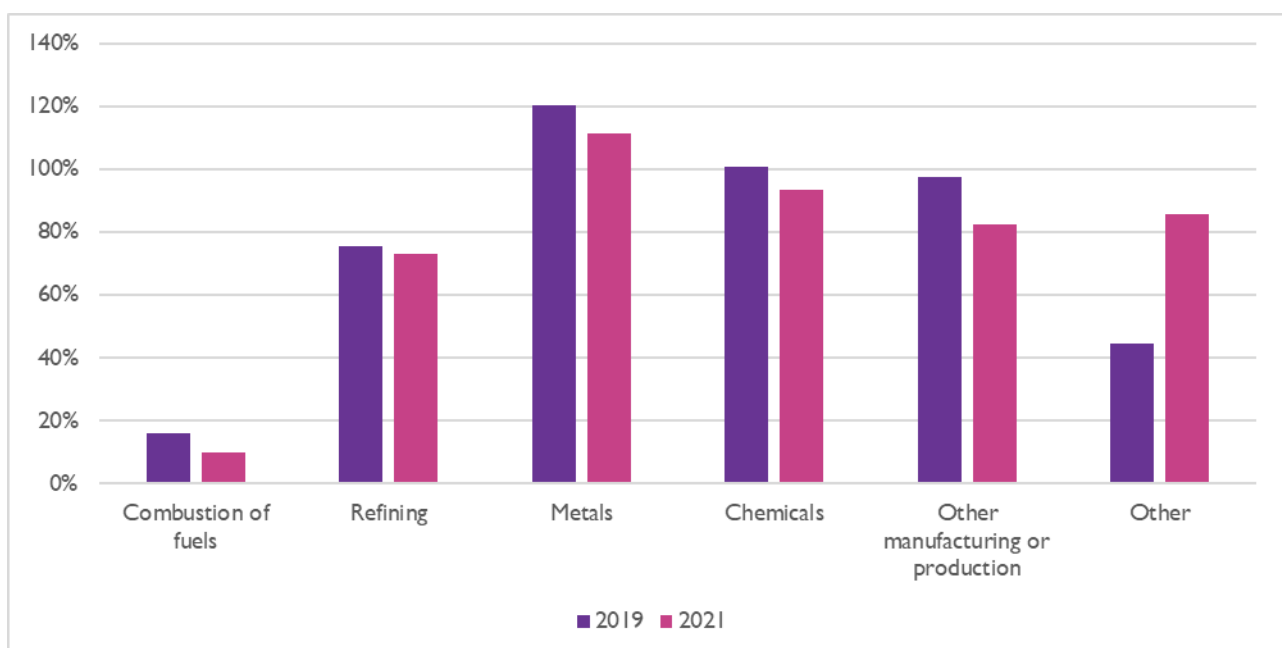
This is the final report of the Europe Economics project for DG CLIMA under Request For Service No 4 - under framework contract CLIMA.B.1/FRA/2017/0009-Lot No: 2. Under this contract Europe Economics has assessed how firms that are required to surrender EUAs under the EU-ETS obtain their EUAs, why they obtain them in the ways that they do, whether there are any barriers to their participation in auctions or secondary markets, and what the implications might be for the functioning of these markets of certain legislative proposals currently before the European Parliament.

1.1 Context to the study

Overview of the EU-ETS

The EU emissions trading system (EU ETS) is a cornerstone of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively. It covered around 36 per cent of the total emissions of the European Economic Area (EEA) in 2020-21, encompassing activities from the power sector, manufacturing industry, and aviation. Many sectors are provided with a free allocation of allowances. Compliance entities that do not receive any free allocation, or have a shortfall compared with their emissions, can purchase allowances (EUAs) through auctions or on the secondary market – either spot or derivative contracts – via exchanges or over-the-counter (OTC). The figure below shows the proportion of verified emissions that were freely allocated allowances as a proportion of verified emissions for 2019 and 2021 (2020 excluded due to the impacts of COVID on emissions).

Figure 1-1: Freely allocated allowances as a proportion of verified emissions, 2019 and 2020



Source: European Environmental Agency EU-ETS data Viewer [\[online\]](#)

Currently, a wide range of entities can participate in EU ETS auctions and in the secondary market, including compliance entities and financial market participants (e.g. credit institutions, investment

firms, and commodity trading firms). For the efficient functioning of the EU ETS, it is beneficial to have the participation of a wide range of market participants in auctions and on secondary markets. For example, on derivative markets compliance entities hold long positions for hedging purposes, and financial firms such as banks and investment firms hold short positions to make a market. Financial institutions participate in auctions to provide intermediation services to compliance firms and to buy allowances for the creation of derivative contracts. The participation of financial institutions alongside compliance entities in auctions contributes to the volumes needed to create liquidity and clear the auctions.

The ESMA carbon market report attempted to measure the share of activity across different entities, noting the significant challenges in identifying counterparties from the available data. The report shows that auctioned EUAs are predominantly bought by compliance entities – in 2021 nearly 70 per cent of auctioned EUAs were bought by non-financial entities, with this proportion holding relatively steady over time. It further shows that the top purchasing entities were also non-financials.

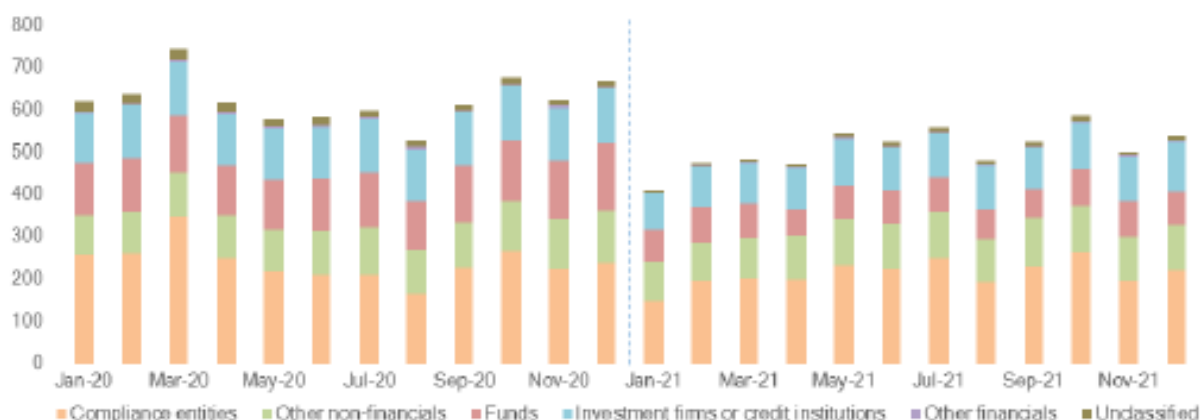
Table 1–1: Summary of participants in EUA auctions between January – December 2021

Type of entity	Country	Share of purchases	Number of participants
Non-financials	3 UK entities 3 Swiss entities 33 not disclosed	Top 3 participants purchased 49 per cent of EUAs	34
Financials	3 UK entities Two thirds from other countries	Top 4 financials purchased 28 per cent of EUAs	14

Source: ESMA Carbon Market Report, p54. Non-financial are defined as the combination of compliance entities and other non-financials.

Similarly, compliance entities accounted for approximately 40% of the total number of counterparties in derivative markets.¹

Figure 1-2: Number of active counterparties trading derivatives by month and sector.



Source: ESMA Carbon Market Report, p61

Market concentration

Participation in auctions and in the secondary markets of EUAs is relatively concentrated. The ESMA report shows that only a limited number of compliance entities and financial institutions

¹ ESMA (2022) “Emission allowances and associated derivatives”.

participate in the auctioning process and trading on the secondary markets. For example, the report highlights that unique participants in EUA auctions held between January 2021 and December 2021 were limited to 48 (of which 34 were non-financials and 14 financials), which contrasts with the approximately 9500² stationary installations and the additional aircraft operators that could theoretically participate as compliance entities. Similarly, participants in the secondary market numbered at around 500 at the end of 2021 similarly.

Although the ESMA report suggests that the degree of concentration in the primary auctions is not problematic, as the main auction participants help disseminate EUAs to other secondary market participants,³ it nevertheless is worth investigating whether there are barriers to participation in the auctions and other markets which could be addressed.

Future changes

There are planned and potential changes to the EU ETS, in particular:

- In its 'Fit for 55' legislative package the Commission has proposed to introduce emissions trading in the sectors of buildings and road transport as a separate system. Under the proposal all emission allowances for these sectors are to be auctioned in this new ETS. In addition, under the proposal, emissions generated by the maritime sector are to be included in the existing EU ETS. These reforms would, once implemented, increase the number of compliance entities that require EU emission allowances in the following years.
- In Phase IV of the EU ETS (2021 – 2030) benchmarks for calculating the share of freely allocated allowances will be recalibrated. This is likely to lead to the reduction in the share of freely allocated allowances for a number of industrial sectors, increasing the importance of their participation in the EU ETS markets. Under the 'Fit for 55' legislative package these requirements of free allocated allowances will be further amended, reducing and gradually phasing out over time the amount of freely allocated allowances. These reforms, once implemented could further enhance the need for compliance entities to acquire emission allowances through EU carbon markets.
- In June 2022, the European Parliament voted to adopt reforms to the EU ETS which included the restriction of market access to compliance entities and financial service providers acting on their behalf. However, political agreement has been reached on the fit for 55 package in December 2022 for a package which includes measures to enhance market monitoring and transparency but does not include the restriction of market access.

These upcoming and potential changes to policy and the next Phase of the EU ETS mean that it is necessary to assess the functioning of the EU ETS, and to identify and remedy any potential barriers to its success.

1.2 The objectives of the study

Given the above context, the objectives for this study are to:

² SWD(2021) 601 final, Impact assessment on Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757, p57, [\[online\]](#)

³ ESMA (2022) "Emission allowances and associated derivatives", p56.

- Identify and quantify the different ways in which compliance entities acquire allowances, and assess the rationale for choosing the different options. Differences or trends across compliance entities in terms of sector, size, turnover, and geographical location are to be noted.
- Identify and assess the legal, financial, and economic hurdles that could inhibit operators from participating in the market, in particular in the auctions of EUAs.
- Provide recommendations to facilitate participation of operators, and in particular SMEs to auctions, and on secondary markets of EUAs.

1.3 Methodology

Our approach to answering the research questions consisted of the following inputs:

- a survey of compliance entities;
- a survey of national competent authorities;
- an interview programme covering compliance entities and their industry associations, national competent authorities, financial entities and trading platforms; and
- supporting desk-based research.

1.3.1 Compliance entity survey

We distributed a survey to all compliance entities in the EU ETS to gather information on:

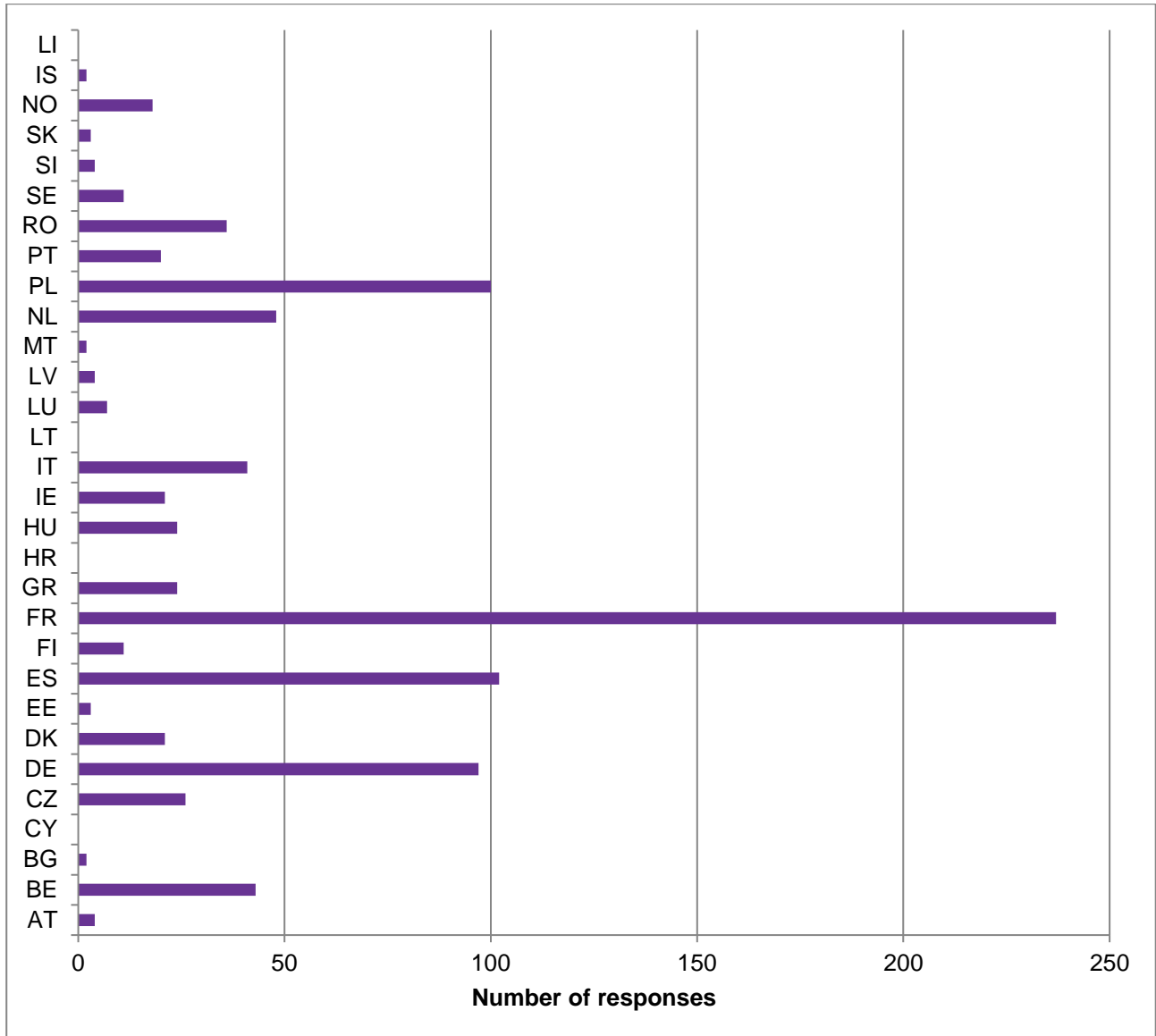
- The ways in which they sourced allowances for compliance purposes (e.g. through auctions, secondary markets or OTC).
- Whether they participated directly or used intermediaries, proxies or brokers.
- The main types of EUA contracts (spot, futures, forward, options) they purchased and why.
- Whether they experienced any barriers to participating in the auction or secondary markets.
- Whether their acquisition strategy had changed since 2018 (key revisions to the EU ETS), or was likely to change going forward, and why.

The main distribution channel was through national competent authorities across the EU27 who sent the survey to all registered compliance entities. Targeted industry associations representing the main compliance sectors also distributed the survey on our behalf. The full question set are contained in Appendix 3.

There were **918 responses** in total to our survey. By Member State these broke down as shown in Figure 1-3. The largest response rate was from France, followed by Spain, Poland and Germany, all with fairly similar numbers. There were four countries for which we obtained no responses: Cyprus, Croatia, Lithuania and Liechtenstein, all of which have very small numbers of entities ranging from between 10 and 60.⁴

⁴ The Appendix contains details of how we engaged with these countries.

Figure 1-3: Breakdown of response rate by country (number of responses)



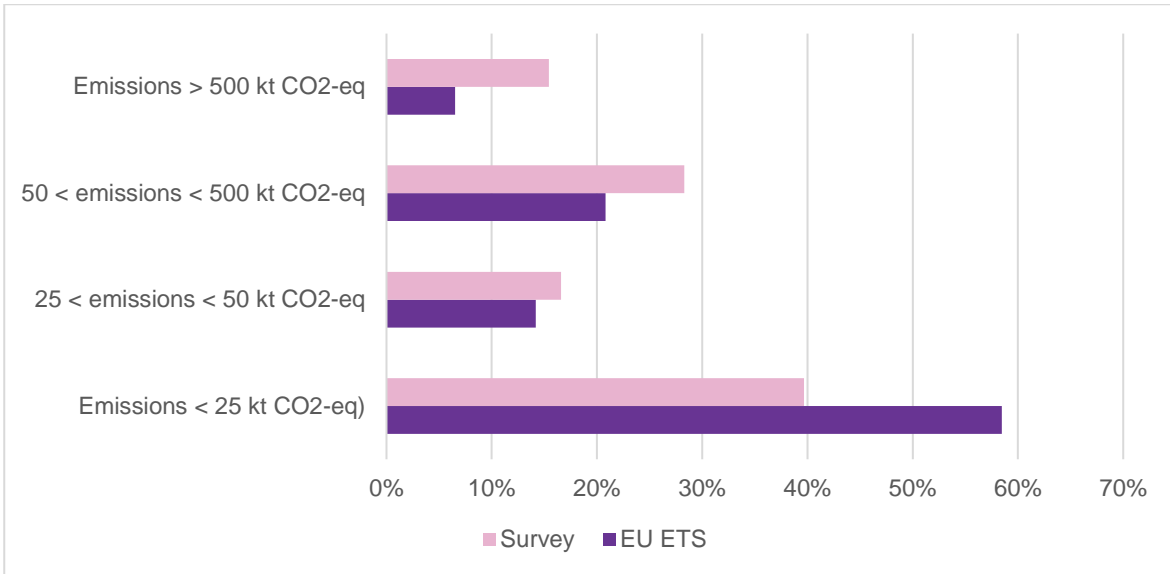
Source: Europe Economics survey, 2022

Representativeness

Comparisons of our survey results with the latest EU ETS data⁵ demonstrates the representativeness of our survey results. The number of entities by size in our sample mirrors the distribution in the EU ETS, with a slightly lower representation of the smallest size category. However, this group is still very well accounted for in our survey, with 40 per cent of responses.

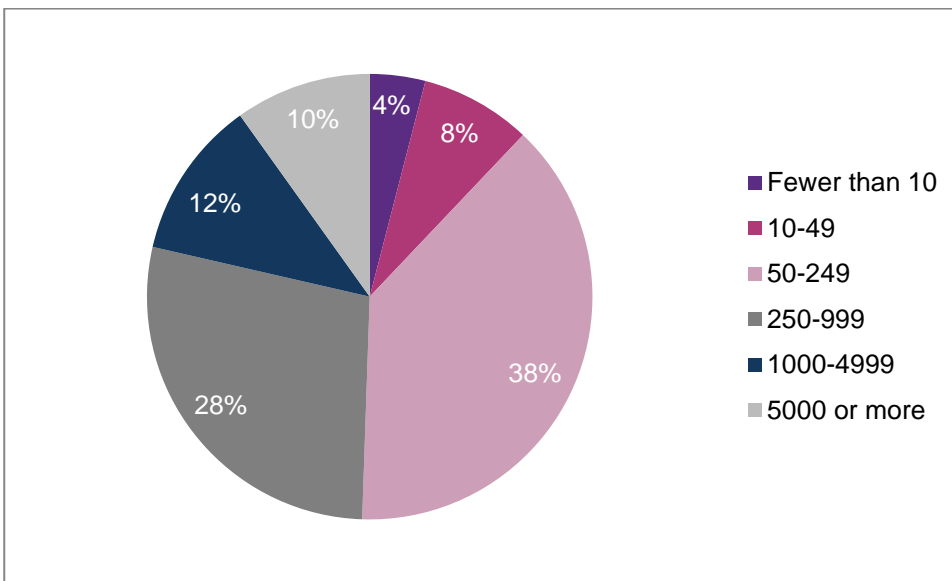
⁵ Data from the European Environment Agency EU Emissions Trading System (ETS) data viewer for 2021: [\[online\]](#)

Figure 1-4: Percentage of entities by size of emissions



For interest we also note how our survey breaks down by size of entity in terms of numbers of employees. As can be seen, around half can be classified as SMEs (as defined by headcount of fewer than 250).⁶

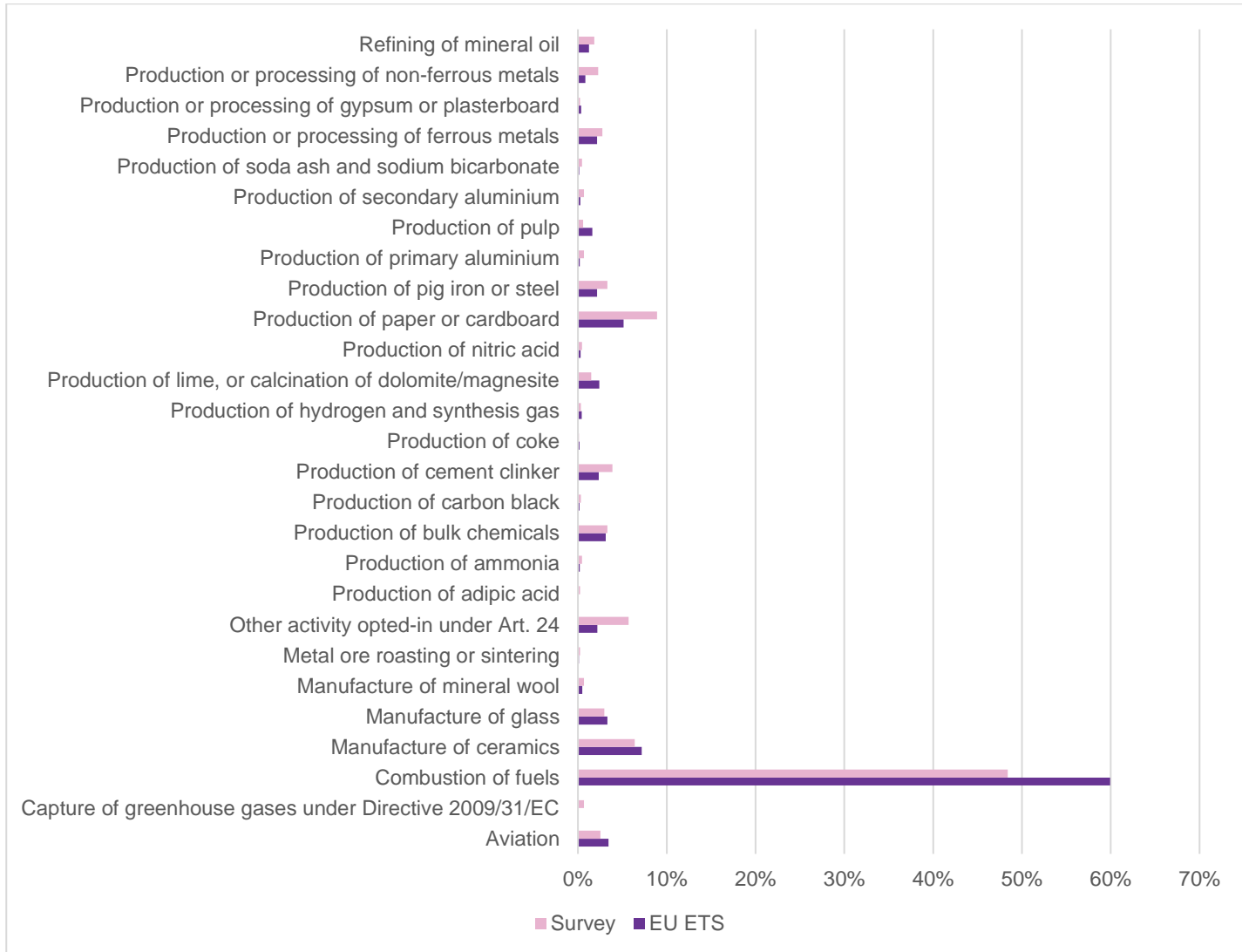
Figure 1-5: Survey participants by employee numbers



Our responses also broadly mirror the main sectors in the EU ETS.

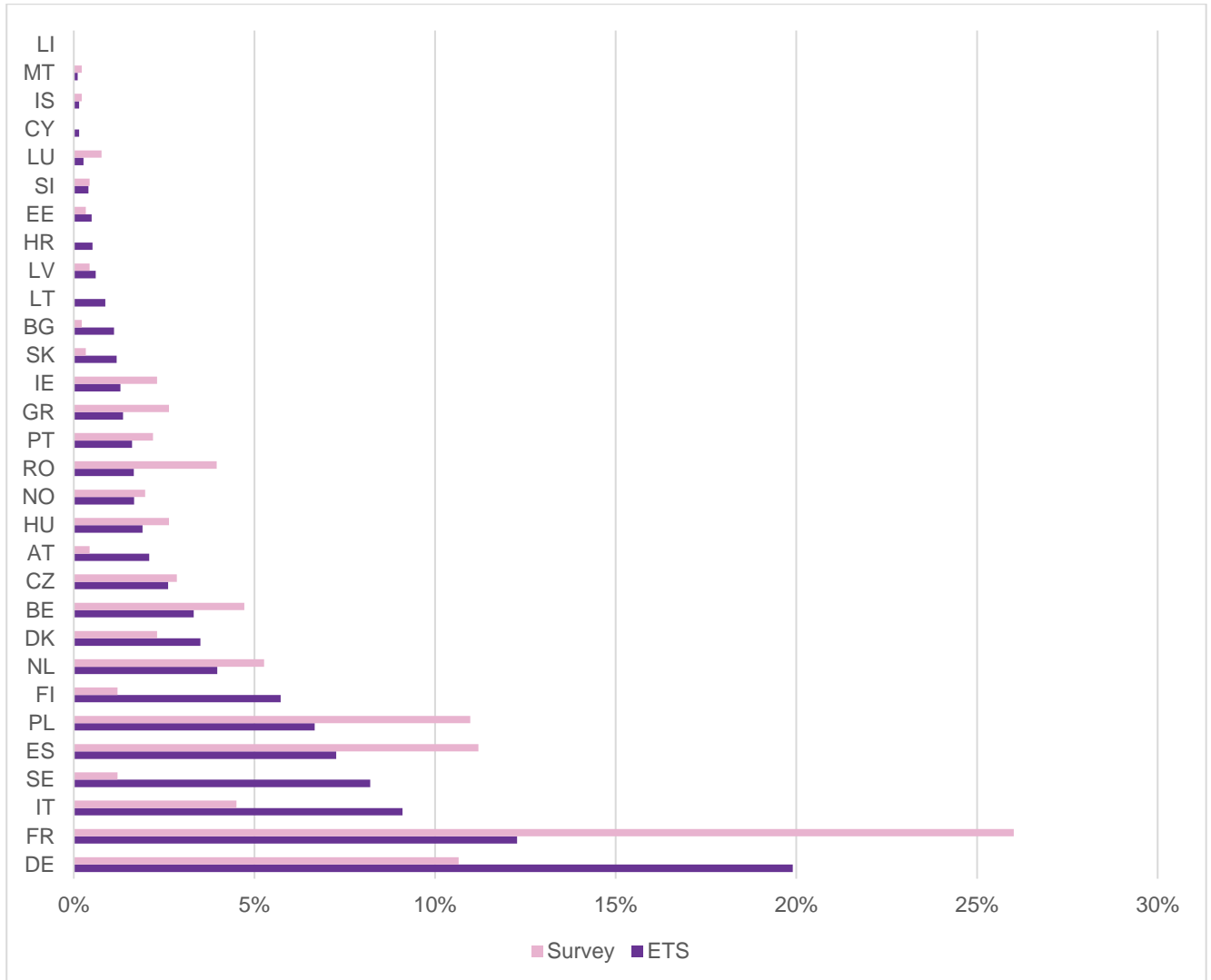
⁶ We acknowledge that the official definition of SME is more complex than this but we have data only on the employee head count.

Figure 1-6: Percentage of entities by sector



Our survey shows some over-representation of France, Spain and Portugal, and some underrepresentation of Sweden and Finland. However, the responses represent all the largest Member States by number of entities in the EU ETS, and indeed cover every Member State except four.

Figure 1-7: Percentage of entities by Member State



1.3.2 National competent authority survey

We prepared a survey of NCAs for which we received **15 responses**.⁷ The survey was more qualitative in nature, seeking the views of NCAs as to whether any barriers to participation exist and how they would expect their compliance entities to obtain allowances. The survey questions are contained in Appendix 3.

We have used the responses to the NCA survey to add to our analysis of the research questions.

1.3.3 Interview programme

We conducted **32 interviews** across compliance entities, trade associations, and financial firms (including platforms) as follows.

⁷ Responses received from AT, CZ, DE, DK, EE, ES, HU, IE, IT, MT, NL, RO, SE, SK, NO.

Table 1-2: Breakdown of interviewees

Financial firms	Compliance entities	Trade associations
6	17	9

The interviews with compliance entities explored their survey responses in greater detail and obtained valuable insights into patterns of responses. For instance, it became clear that many entities did not draw a clear distinction between accessing EUAs from auctions directly themselves, or through a broker.

Interviews with trade associations provided insight into general trends within sectors in terms of EU ETS participation and underlying drivers, and views on policies to address various issues. They were also used to fill gaps in sector coverage and to explore specific topics (such as rules for publicly owned heating companies). A list of the trade associations we engaged with is contained in Appendix 1.

Financial firms and EUA trading platforms were interviewed to obtain evidence on how the markets function, insights into compliance entities' purchasing and hedging strategies, and the role of financial institutions.

1.4 The structure of this report

For the remainder of this report, we address each of the three objectives in turn, presenting the evidence from our fieldwork and our analysis.

The Appendices contain the details of our fieldwork.

2 How and Why Compliance Entities Obtain their Allowances

In answering this research question, we address the following sub-questions from the study's Terms of Reference:

- Quantify the different sources for EUAs that compliance entities employ to comply with their compliance obligations, making a distinction between sectors/industry, size of entities.
- Assess the underlying reasons why compliance entities favour a certain set-up for sourcing EUAs, making a distinction between economic (cost/benefits/efficiency), legal and any other considerations. In particular, assess to what extent hedging is important for compliance entities for their sourcing strategy.
- Assess the evolution of sourcing behaviour of compliance entities over time since 2018 and determine if the proposals in the “fit for 55” package could modify the sourcing behaviour of compliance entities in the future.
- In addition, assess the implications of restricting market access to compliance entities and financial intermediaries trading on their behalf for the sourcing of emission allowances by operators.

2.1 Quantification through survey results on sources

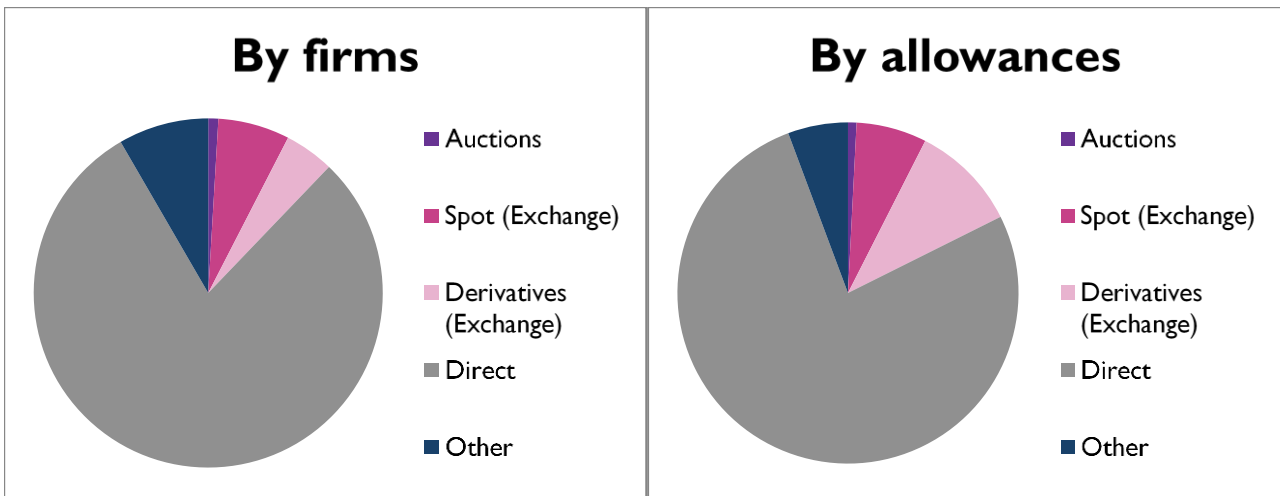
2.1.1 How firms obtain their allowances

In Appendix 2 we explain how we use the answers across the survey to derive an assessed breakdown of how firms obtain their allowances. We report that below as a percentage of the firms in our survey and broken down by the percentages of allowances obtained via the different routes.

Table 2-1: How allowances are obtained by compliance entities

	Auctions	Spot (Exchange)	Derivatives (Exchange)	Directly from another firm (eg an intermediary)	Other (eg parent company or free allocation)
By firms	1%	7%	5%	79%	8%
By allowances	1%	7%	10%	77%	6%

Figure 2-1: How firms obtain their allowances



We can see that only a small percentage of allowances (around 1 per cent by both firms and allowances) were obtained through auctions. We can see that the role of derivatives purchased directly from exchanges is greater when measured by allowances than by firms, implying that larger emitters are materially more likely to purchase derivatives on exchange. By both measures the overwhelmingly main source is direct purchases from other entities – which as we shall see in what follows are overwhelmingly financial entities.

2.1.2 How the sourcing of allowances varies by the size of firms

Next we report how the sourcing of allowances varies according to the size of firms, defined in two ways:

- The volume of allowances firms use;
- The number of employees firms have.

Figure 2-2: Breakdown of allowances sources by allowances used

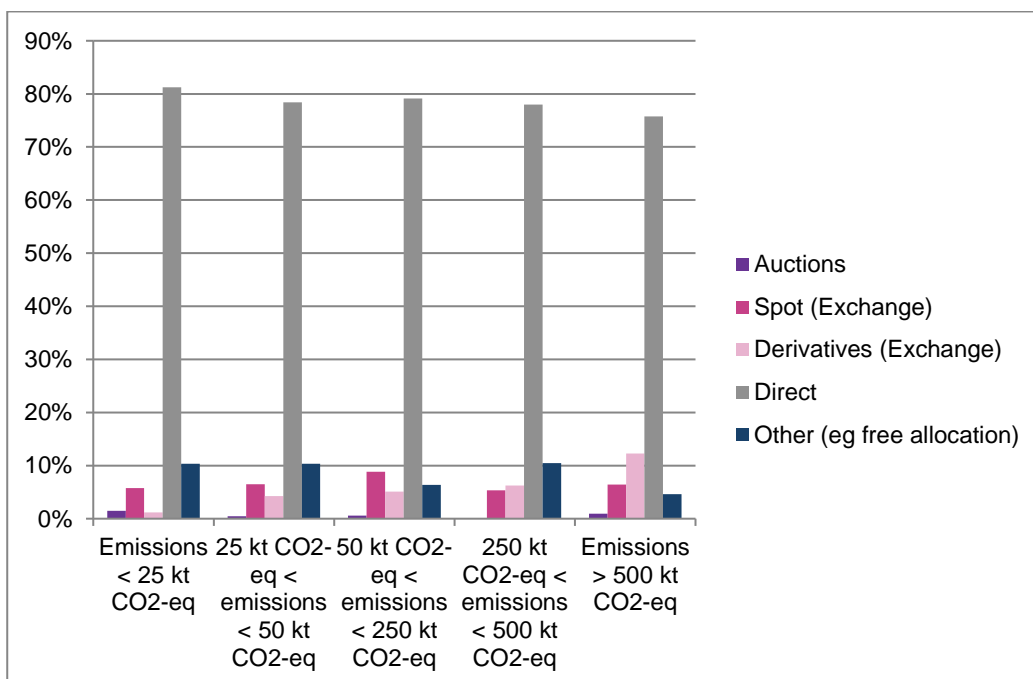
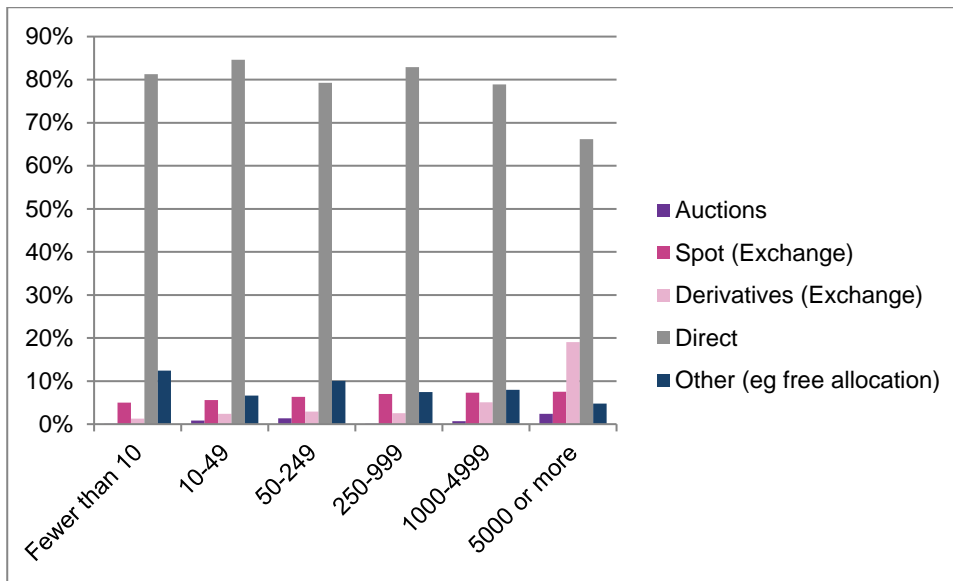


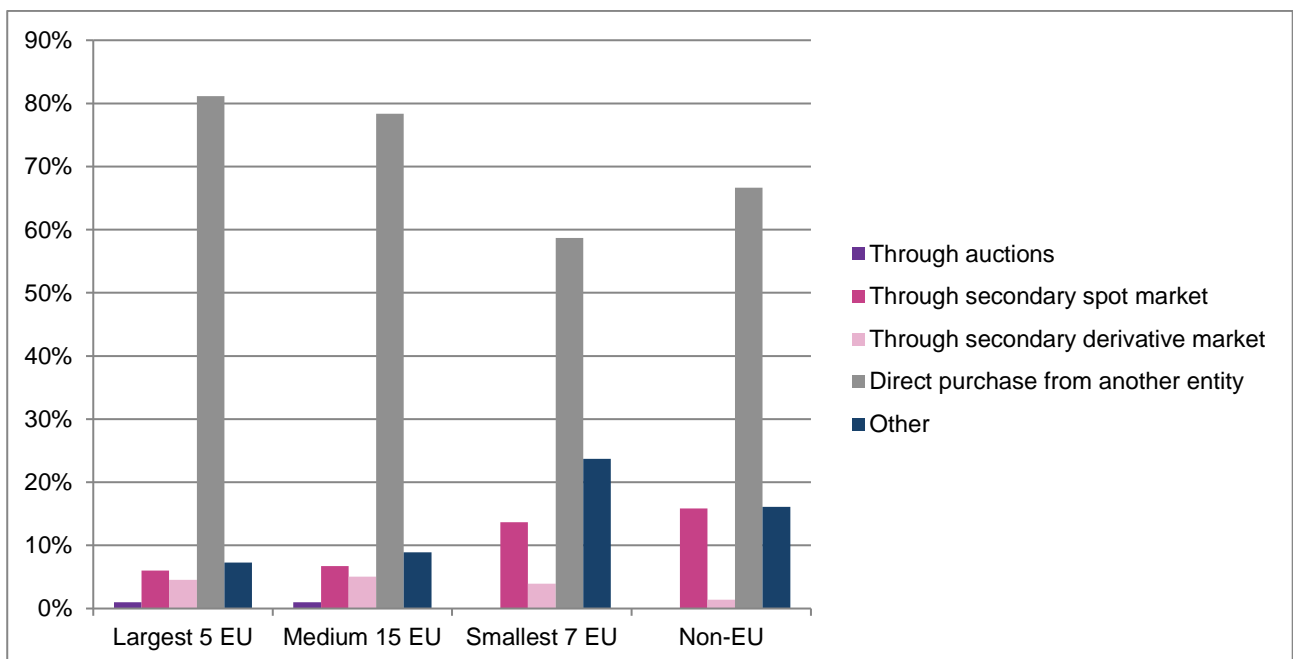
Figure 2-3: Sourcing of allowances by number of employees



The clearest features observable in these graphs are that for the largest firms there is materially more use of derivatives and slightly less use of direct purchases. When defined in terms of employee numbers it also appears there is more use of auctions by the largest firms, though this is less apparent when size is defined in terms of emissions.

2.1.3 How sourcing differs across Member States

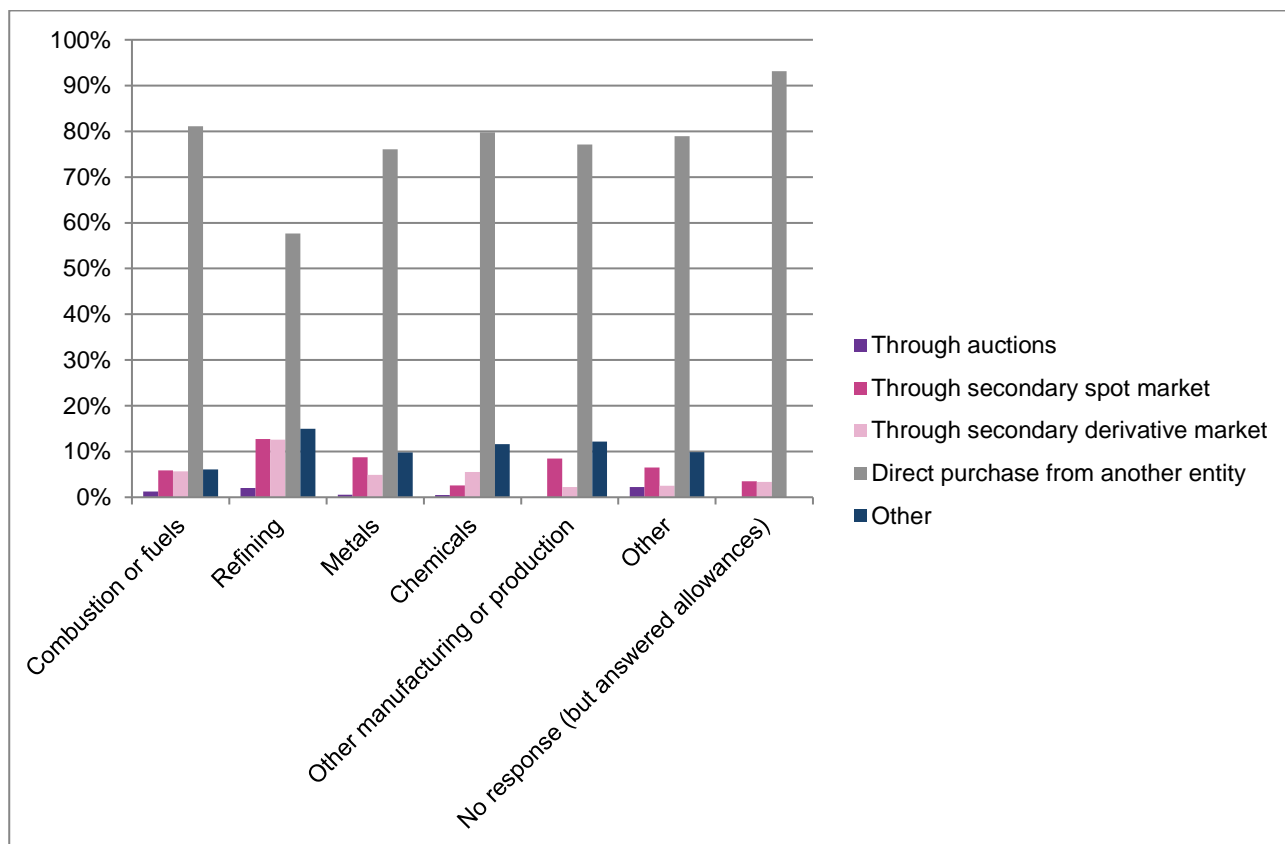
Figure 2-4: Sourcing by Member State



The main visible pattern in respect of Member States is that in the smallest 7 Member States and non-EU states there is less use of intermediaries and more of “Other” (eg parent company or free allocation) and secondary spot market purchases. Across the 20 largest Member States the pattern seems fairly consistent.

2.1.4 How sourcing varies across sectors

Figure 2-5: Breakdown of allowances sourcing by sector⁸



We see here that in the sectors falling under “Refining”, there is less use of direct purchases from other entities and more in secondary spot markets, derivatives markets and from “Other” (eg parent company or free allocation). Another noteworthy feature is that whereas for most markets secondary market purchases are a more important source than secondary derivatives markets, for chemicals the reverse is true.

2.1.5 Summary from NCA survey

Responses to our NCA survey suggest that large companies (especially those most related to the energy sector) have a more active role in the markets, most likely due to the fact that they need to purchase most/all of the allowances that they need to surrender. Larger entities will also have the ability to manage compliance across their (EU wide) group of companies, and transfer EUAs to the individual ETS regulated entities nearer to the compliance deadline. NCAs expected this would mean that they have the scope to participate directly in the markets (most likely because the volumes of allowances they are dealing with are sufficiently large to justify the effort of participating directly in the markets). In addition, given that most energy suppliers are active in the commodities market as well, these companies have traditionally gained experience and build up relevant knowledge for trading/sourcing methods.

⁸ Sectors are defined as set out in Appendix 4.

Other sectors which are mainly comprised of SMEs and family-run enterprises (such as ceramic production), tend to purchase the allowances from other ETS installations or financial intermediaries.

The NCA views also suggested that industrial installations usually have banked EUAs from previous trading periods and are using them up together with actual free allocation, thus reducing their need on the markets. This should abate over the longer term as the proportion of free allocations falls.

In some Member States where there are very small numbers of stationary installations with close relationships, NCAs thought there are often bilateral arrangements between these to facilitate the acquisition of allowances for their needs.

2.2 Underlying reasons for acquisition strategies

2.2.1 Type of EUA contracts

Spot contracts

Our fieldwork indicates that compliance entities that have low emissions and/or obtain the majority of their allowances through free allocation tend to buy spot allowances to make up the shortfall in emissions, usually close to the time of surrender, although with the increasing carbon price some entities are beginning to purchase EUAs throughout the year to avoid the risk of a large price rise just before they need to surrender. They have little need to hedge their future exposure to the price of carbon, and sufficiently small spot needs such that holding these on their balance sheets for any length of time is not a problem.

As shown in Figure 1-1, a number of sectors have a high proportion of freely allocated allowances relative to verified emissions – indeed for some free allocations exceed emissions. Our survey data on the use of derivative markets broadly reflects this – metals, and manufacturing and production which have the higher shares of freely allocated allowances report the lowest derivative market sourcing in our survey.

Allowances from auctions

Entities purchasing allowances directly from auctions tend to be those with larger purchasing needs, to justify the efforts involved in registering in the auctions and with the Registry. This includes large compliance entities buying for their own purposes or for other entities eg members of a group. It also includes financial entities purchasing allowances to build up inventory to underpin the derivative contracts they make, or those buying on behalf of others in an intermediary or agency role.

Our fieldwork indicates that the rationale for participating in auctions (as opposed to say the secondary spot market) is not due to significant differences in transactions or procedural costs, such as fees or set-up costs, between the two markets. Rather, the key rationale is price, with prices on auctions at times (but not always) slightly lower than those on the secondary market (in the order of 20 – 50 basis points). Some respondents also suggested that it can be possible to take advantage of price arbitrage during the course of a day given pricing volatility across the two markets. A number of respondents to our fieldwork noted that they only participate in auctions if the price is right, and that buying from the auctions is not necessarily a 'fixed' strategy they always employ.

Derivatives

Entities with larger compliance obligations that receive few or no freely allocated allowances tend to have a more complex strategy to fulfil their obligations. They tend to buy derivatives to hedge their future exposure to the carbon price. Power generating firms that sell power forward in particular need to hedge their input costs across the same timeframe, and thus would seek to hedge their carbon exposure up to three or four years ahead.

Entities with large obligations also purchase derivatives as this enables them to lock in a price for EUAs throughout the year without having to hold a large exposure on their balance sheets (thus limiting their cash flow). They would for example buy December futures (the most liquid contract, for historical reasons) and then either take delivery of the physical EUAs and hold these on their balance sheets until surrender, or extend the contracts between December and April.

Our fieldwork shows that, apart from the power companies and large industrials, hedging behaviour among compliance entities is in general unsophisticated, with entities considering their allowance needs only one – or at most two – years in advance. This is often due to the nature of their production, where forecasting production further in advance is difficult. Some companies we spoke to also mentioned internal accounting rules which specify that emissions costs must be allocated to usage (or sales, e.g. in the case of biodiesel) in close proximity, which prevents hedging a number of years in advance.

Some entities buy forward contracts in addition to futures, as the former can be tailored to specific a range of delivery dates. Our survey results imply that forward and futures are purchased in roughly equal proportions (with slightly more futures) – see the results for Q9 in Appendix 3.

The ESMA report shows that most of the trading in the secondary market takes place through derivative contracts, which is in part a reflection of the EU ETS cycle: compliance entities must surrender allowances once a year, and many choose to take long futures positions with investment firms to make up for the shortfall between the allowances they may receive for free and their expected greenhouse gas emissions, as opposed to purchasing physical EUAs on the spot market.⁹

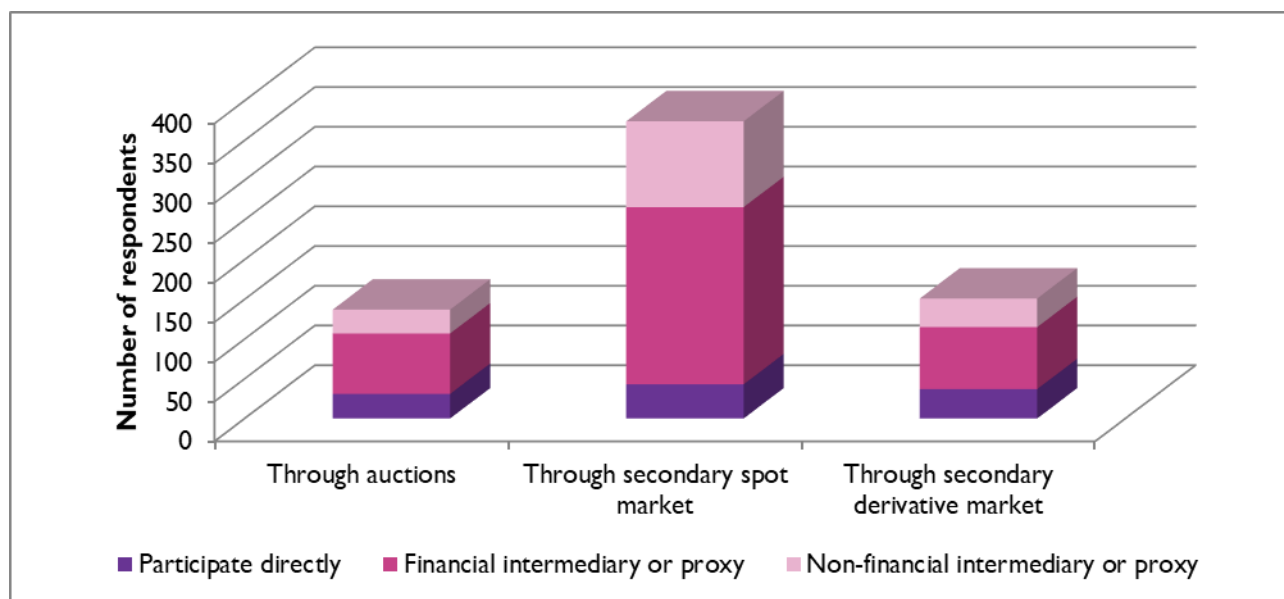
That is not to say that larger entities never buy spot EUAs – our fieldwork shows that some will do so as part of their strategy when the price is favourable.

In our fieldwork we explored whether there were any limitations on the extent to which publicly owned compliance entities could engage in hedging activity (in particular district heating companies). For example, whether there were rules about the ability of municipally-owned companies to buy derivatives, perhaps due to national classifications on their client type (e.g. retail versus professional). We did not find any evidence to suggest this. First, in some Member States district heating installations have relatively low EUA needs as they are increasingly using renewable heat sources, and thus the issue about derivative usage does not arise. Second, where there are restrictions on derivative use these are specifically in the case of ‘speculative’ activity – hedging to cover foreseen residuals in emissions is permitted. Responses we received to this question were limited, and the European heating association EuroHeat was not aware that this was an issue among its members.

2.2.2 Sourcing channel

Our survey results show that the majority of compliance entities use financial intermediaries when purchasing allowances via auctions or the secondary markets.

⁹ ESMA Carbon Report (2022) p113.

Figure 2-6: Sourcing channel by number of respondents

n = 662

Question 6: For those of your emissions allowances that you obtain via auctions or secondary markets, do you (in the main) obtain them by participating directly or do you operate via an intermediary or proxy, and if the latter (mainly) what sort of intermediary.

Question 8 (see section 7.1.8) further reveals that the majority of financial intermediaries are banks and investment services (including brokers).

Entities with simple needs, such as those who only buy spot contacts to fill the shortfall in their freely allocated allowances, tend to rely on brokers to purchase EUAs for them. Our interviews indicate that in these cases EUAs are sourced like any other input, with the companies putting in orders for the required amount of allowances when they need them. Some use the same broker as a regular supplier, others approach 2-3 brokers to find the best price. The compliance entities are generally agnostic (and in many cases ignorant) of where the brokers source the EUAs, and in most cases could not tell us whether their brokers sourced the EUAs directly from auctions or from the secondary spot market. These entities do not participate directly in the auction or secondary markets as the volumes they would be purchasing are too small to warrant the time and resources (including expertise) this would entail. From our fieldwork, this included industrial entities in sectors such as metals and paper, and other energy producers such as biofuels or waste incineration. The majority of these respondents were also small emitters, with emissions in the lowest two categories (below 50 kt CO₂). It is likely that this strategy represents a majority of compliance entities i.e. those buying mainly spot and with small allowance shortfalls. Over 70 per cent of the EU ETS entities emit below 50 kt CO₂ equiv.

Entities with larger compliance needs, including those in sectors with no freely allocated allowances, tend to rely on financial entities to provide a more holistic service, including providing credit, sourcing derivatives, or acting as the counterparty to OTC derivative trades with the compliance entity. From our fieldwork, this included mainly large energy producers (with the lowest proportion of freely allocated allowances, as seen in Figure 1-1) and large chemicals producers. From Figure 1-4, this is likely to be a minority of entities, as only around 28 per cent of entities emit more than 50 kt CO₂, and only seven per cent emit more than 500kt CO₂.

Box 1: Services provided by credit and investment institutions

Large banks and investment institutions can act as both principal and agent in the carbon market (the latter simply executing client orders). In their principal roles, these institutions provide hedging

services to compliance entities in much the same way as they would other products – often as part of a wider client relationship, but with each transaction still needing to stand on its own. The financial institutions would provide analysis and support to their compliance entity clients about the carbon market, and then compete with other banks on price for the hedges the client decides to undertake. Banks may also provide other services to compliance clients such as credit or cash management.

Some financial institutions are only active in the derivatives market, whilst others will purchase EUAs at auctions and sell these or hold them on their balance sheets whilst delivering forward contracts to clients. The institutions will provide contracts either on a cleared basis through an exchange, or OTC. OTC is typically used for physically deliverable contracts for compliance clients.

Our fieldwork suggests that only large compliance entities have such relationships with financial institutions and/or engage with them OTC for derivative contracts. As described above, entities with small and/or simple compliance needs tend to use brokers to provide allowances much like any other production input.

Some of the largest entities have in-house trading expertise, and the very large can have their own trading arm/subsidiary. These would be more likely to participate directly in auctions (when they need spot allowances) or enter into OTC derivative transactions with large financial institutions.

The ESMA report shows that derivatives are largely traded on exchanges – on average more than 85 per cent of the notional amounts of EUA derivatives are ETD (exchange-traded derivatives), which corresponds to 90 per cent of the trades, as shown in the figure below.

Figure 2-7 : Notional amounts and number of trades by ETD/OTC split



Note: Different scales. Notional amounts (EUR billion, left chart) and numbers of trades (thousands, right chart). The dotted bar marks the UK withdrawal date from the EU. Only client reports included. Source: ESMA¹⁰.

Our survey did not explicitly explore the share of OTC versus exchange-based trading behaviour. The response to Q6 in Appendix 3 at first glance may indicate a higher than expected share of OTC trading as the majority reporting secondary derivative market activity said this happened through ‘another entity’. However, this does not necessarily indicate OTC activity, as the ‘financial intermediaries’ involved may well source the derivatives on exchanges.

¹⁰ ESMA (2022). ‘Emissions allowances and derivatives thereof’. p.58, Figure 20. – [\[online\]](#)

2.3 Evolution of sourcing behaviour

A number of changes to the EU ETS occurred in 2018, as outlined in the box below, which led to the steady increase in the price of EUAs.

Box 2: Changes in the EU ETS since 2018

Several factors explain the steep rise in carbon prices since 2018.

The entry into force of the revised EU ETS Directive in April 2018 is a key factor. The new rules for Phase 4 (2021-2030) contribute to reducing the current surplus of emission quotas on the market due to a stronger decline in the annual emission cap (from -1.74% to -2.2%) and the reinforcement of the market stability reserve (MSR) rules. The MSR rules in particular would have spurred an increase in prices by their effect in removing allowances from circulation and placing them in the reserve in increasing amounts over the years.¹¹

An increase in the price has also been attributed to the heatwave during the 2018 summer period reducing production from low-carbon generation facilities across the EU, in favour of more polluting conventional thermal generation, which in turn increased demand for emission quotas.¹² Likewise, the steady increase in industrial output in the EU since January 2017 has implied a rise in demand for quotas and contributed to the perception of a tightening market.

In addition, future changes are expected as described in the introduction to this study, such as the Fit for 55's Package's expansion of the EU ETS to include maritime emissions and the extension to capture emissions from buildings and road transport, and the recalibration of benchmarks for free allocation in Phase 4. Our study therefore examines changes in entities' sourcing behaviour since 2018, and potential changes going forward.

Our survey results (see Question 13 and 14 in sections 7.1.13 and 7.1.14) show that for most firms reliance on auctions is unchanged, but insofar as there is some change it tends to be an increase (perhaps reflecting reduced availability of "free" allocation) and in particular an increased use of financial intermediaries. Similarly, the majority has experienced no change in their interaction with secondary markets, with changes mostly being an increased participation via intermediaries. These trends are possibly reflecting the reduced availability of "freely" allocated allowances and increasing prices. Our results suggest that legal or regulators changes are not a contributory factor.

A similar pattern emerges regarding firms' expectations of their future participation in auctions and secondary markets. The majority foresees no change, but those that do anticipate greater participation, mainly through a greater reliance on direct participation (for auctions) and intermediaries (auctions and secondary markets).¹³

Our interviews support these trends, with industrial participants suggesting they may well need to pay more attention to their compliance strategies in the future as prices increase and/or their compliance obligations increase with the reduction in free allocations in Phase 4.

¹¹ European Commission, "ETS Market Stability Reserve will start by reducing auction volume by almost 265 million allowances over the first 8 months of 2019", Press release, May 15th, 2018, available at: <https://ec.europa.eu>.

¹² E.g. France reduced its nuclear power generation, Scandinavia lowered its hydro generation levels and Germany lowered its wind production levels.

¹³ See Questions 16 and 17 in Appendix 3.

2.4 Implications of restricting access

Proposals to restrict market access to compliance entities and financial intermediaries trading on their behalf are driven by the theory that participation in the carbon market of financial institutions trading on their own behalf can drive up demand for – and therefore prices of – allowances. In particular, it is thought that financial institutions such as hedge funds or those using high-frequency algorithmic trading can engage in ‘excessive’ speculation, seeking to profit from changes in the price of EUAs. Investment funds may also buy up allowances as an asset class, without any contribution to fulfilling compliance entities’ obligations.

2.4.1 Scale of financial institutional activity

The ESMA carbon report attempts to shed light on the scale of such trading activity. It first notes that identifying the type and origin of carbon market participants – for example financial institutions trading solely for their own benefit – is extremely challenging given the complexity of bringing together large datasets based on different pieces of EU legislation.¹⁴ Nevertheless, the report does provide some broad insights on this subject.

Relative share of financial institutions

As described in Section 1.1, the ESMA report shows that auctioned EUAs are predominantly bought of compliance entities. In 2021 more than two thirds of auctioned EUAs were bought by non-financial entities (69 per cent), with this proportion holding relatively steady over time.

Similarly, derivative markets are dominated by compliance entities and other non-financials that are holding long positions for hedging purposes and trading with investment firms holding short positions to make a market.¹⁵ Compliance entities accounted for approximately 40% of the total number of counterparties.

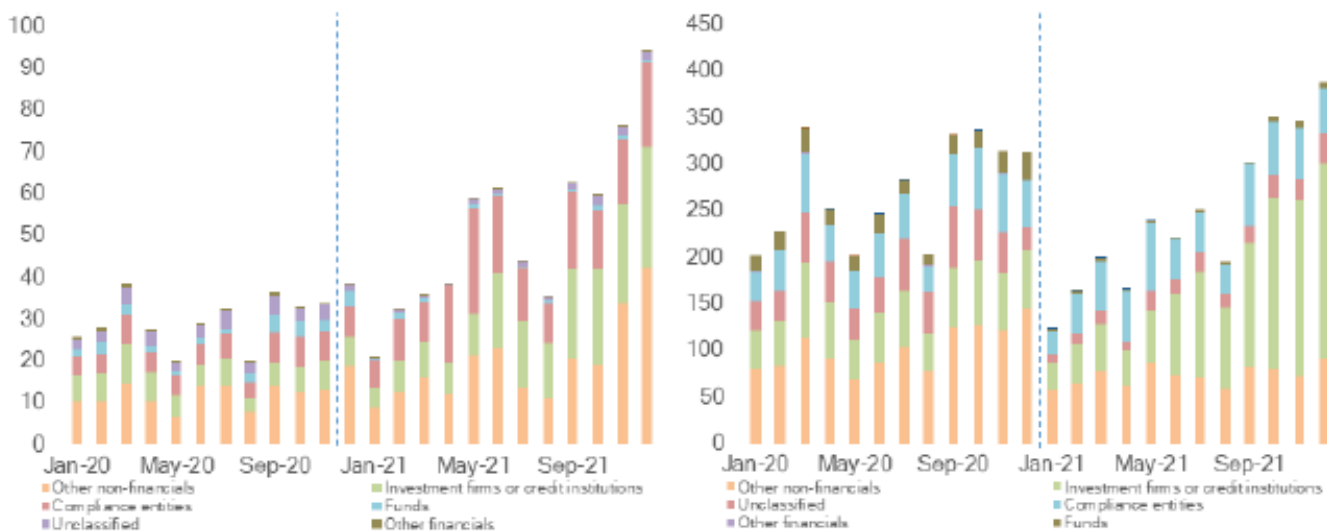
On average, non-financial corporations accounted for 63% of the notional amounts and 54% of the trades. The figure below shows that funds have a minimal share in the notional amounts traded (left-hand chart) and a relatively higher share of the number of trades (right-hand chart). The report finds that the number of investment funds taking part in this market is high but volumes traded and positions taken are small in comparison to other market participants.¹⁶

¹⁴ ESMA (2022) Carbon Market Report, p114.

¹⁵ ESMA (2022) Carbon Market Report, p113.

¹⁶ ESMA (2022) Carbon Market Report, p114.

Figure 2-8: Notional amounts (EUR billion, left chart) and number of trades (thousands, right chart)



Source: ESMA Carbon Market Report, p62

Growth of financial entities

The ESMA report points to the entry of a growing number of financial entities with limited direct connection to the regular functioning of the EU ETS market. Literature suggests these may include market participants with short-term trading strategies, as well as longer-term investors with buy-and-hold strategies, seeking either exposure to carbon markets or ways to hedge their climate transition risk exposure.¹⁷ However, there is little evidence of the impact of this behaviour on the supply – and price – of allowances.¹⁸

Scale of high-frequency and algorithmic trading

The ESMA report finds that the comparison of transaction and position-level data shows significant trading activity from high-frequency trading firms and market makers engaging in algorithmic trading, some from the UK and US. However, these are only holding small net positions.

The evidence available in the ESMA report does not support the theory that financial institutions such as funds and high-frequency traders are contributing to either a notable reduction in the supply of EUAs, or increased price and volatility. Furthermore, other emission trading systems do not view financial entities as a threat to the functioning of the market, as shown in the box below.

Box 3: The role of financial institutions in other jurisdictions

Research into emissions trading systems in other jurisdictions (the UK, California-Quebec, Australia, New Zealand and Korea) has not revealed notable concerns about the participation of financial entities. Indeed, a joint consultation issued by all four nations of the UK notes that financial intermediaries trading in ETSS can play an important role in providing liquidity.¹⁹

¹⁷ ESMA (2022) Carbon Market Report, p47.

¹⁸ The ESMA report cites the example of the first large vehicle investing in physical EUAs – “SparkChange” – stating that the overall impact on the volume of EUAs traded is very limited. See page 49.

¹⁹ Joint Consultation: “Developing the UK Emissions Trading Scheme (UK ETS)” [\[online\]](#)

The only jurisdiction with any different treatment of participants is Korea. The Korea ETS (K-ETS) was launched in 2015, and covers 684 of the country's largest emitters, accounting for around 74% of national GHG emissions.²⁰ Only around 10% of allowances are auctioned, the rest being allocated for free. In Phase I of the system, only companies that were registered K-ETS participants and were covered by the emissions cap were allowed to open allowance trading accounts. However, this resulted in a relatively low number of market participants, which was recognized as one of the potential reasons for limited market liquidity.

To address this the government introduced carbon traders, or “market makers” in Phase II (2018-2020) to stimulate carbon trading – by 2021 there were five banks in total with accounts on the carbon exchange permitted to trade allowances as third-party agents.

To further boost liquidity, starting from Phase III (2021 – 2025), domestic financial intermediaries (“third parties”) can participate in the secondary market and trade allowances as well as converted carbon offsets on KRX. In line with this, 20 third parties were approved for participation in the carbon market from December 2021. However, they can only hold up to 200,000 allowances each, to avoid excessive market share.²¹

2.4.2 Implications of restricting access of financial institutions to the carbon market

There are likely to be material negative consequences of restricting access of financial institutions to the carbon market.

The first challenge is how the restrictions would be defined. As described in the next section, a complete ban on the participation of financial entities would create significant problems for the functioning of the derivatives market, given their market-making role. In addition, even with such a ban there may well develop a market for “synthetic” allowance derivatives, based on the credit given by financial institutions to compliance entities to enable them to buy allowances themselves – the cost of that lending would then be a shadow EUA price. It would therefore be difficult to have a de facto removal of financial institutions from the derivatives market. It could also be difficult to monitor the participation of financial institutions, eg if these purchased energy companies to operate through. Restrictions could potentially be more tractable in the auction market. For example, financial institutions would no longer be allowed to hold accounts at the Registry, and would only be able to trade on the direct behalf of compliance entities. This would limit their activity to the basic role of a broker.

This would deprive the market of the essential role of financial entities in providing market liquidity and enabling the creating of derivatives for hedging purposes, not to mention providing a valuable service to compliance entities in accessing allowances.

Services to compliance entities

Compliance entities rely heavily on financial entities to source both their spot and derivative allowances. As shown in Figure 2-1, the vast majority of our fieldwork sample (nearly 80 per cent) obtain their allowances through another entity, and the majority of these use a financial entity, usually a bank or an investment services provider (see Q7 and Q8 charts in Appendix 3 at Section 7).

²⁰ ICAP Factsheet [\[online\]](#)

²¹ Asian Development Bank (2018) “The Korea Emissions Trading Scheme: Challenges and Emerging Opportunities” [\[online\]](#)

As discussed in section 2.2.2, entities with simple needs tend to rely on brokers to purchase EUAs for them. Our interviews indicate that the compliance entities are generally agnostic (and in many cases ignorant) of where the brokers source the EUAs, and in most cases could not tell us whether their brokers sourced the EUAs directly from auctions or from the secondary spot market.

A lack of sophistication in engaging with the carbon markets is corroborated by the nature of responses we received to our survey. As discussed in Appendix 2, there appeared to be many inconsistencies with how respondents believed they sourced allowances (e.g. in Q5) with what they later revealed in other questions relating to the purchase of derivatives (Q9) or the use of other entities (Q7). For example, many respondents who said they purchased allowances on the spot market for Q5 (as opposed to via another entity), later revealed they obtain their allowances through a financial intermediary, who did the spot purchasing for them.

This implies that a significant proportion of compliance entities rely on financial entities and other non-compliance entity brokers simply to obtain their allowances for them. Many supply compliance entities with allowances in the same way as other inputs, rather than executing trades on their behalf.²² This implies that without the direct participation of financial institutions and other non-compliance entities in the carbon markets, many compliance entities would be at a loss as how to access their allowances.

Market making

Arguably an even more important role of financial entities than the provision of services to compliance entities is that of providing market liquidity and sustaining the derivative market.

Financial firms are essential counterparties to trades (they buy spot allowances, hold them on their balance sheets, and create derivatives – forwards and futures – which are essential to the functioning of the market). Indeed, the ESMA report concludes: “large holdings of EUAs in the Trading Accounts of investment firms is not a concern, considering that these holdings appear highly correlated with the number of short positions these firms hold in EUA derivative markets”.²³

If there is no market on which entities can hedge their exposure, then all entities would be exposed to the price volatility of the spot market. One stakeholder consulted considers that without financial firms the EU ETS may as well be disbanded and there be a straight carbon tax on all firms.

Financial entities also bring valuable diversification to the market – a diversified pool of participants is important as value is subjective, and the more views on value the greater the liquidity in the market, leading to a deeper market with narrower spreads than otherwise. An Oxera study argues that the increase in the number of firms (including financials) in the carbon market has led to a significant decrease in relative bid-ask spreads of around 80 per cent.²⁴

The largest short positions in carbon futures are held by financial firms e.g. banks (who buy spot and sell futures against these, therefore hold short futures positions in order to remain risk neutral). Compliance buyers are usually long, and other financial players (investors, hedge funds) account for a much smaller share of the market anyway. Therefore if banks were restricted from this market, this would have a big impact on price volatility.

²² The first approach can be described as an intermediation role, where there is not necessarily a direct link between the purchasing of allowances by the financial institution and the reselling to the compliance entity – this can happen at any time. The second approach represents an agent model whereby the broker/financial entities acts on the express instructions of the compliance entity.

²³ ESMA Carbon Market Report (2022), p113.

²⁴ Oxera (2022) “Carbon trading in the European Union”, p42

Our fieldwork suggests that other compliance entities would be unwilling to take on the role of brokers should the participation of financial institutions be restricted, given the cash flow implications of holding physical allowances on their balance sheets. Large compliance entities have different working capital arrangements to banks. Therefore if they were to buy excess allowances and make available to smaller entities the price would be much higher. Not having the same expertise in providing broking and intermediation services as financial institutions, it is also plausible that they would charge a higher price for service provision. Furthermore, it is plausible that the access to cash and ability to provide credit, being a key function of banks, would not be imitated by other institutions unless at significantly higher cost. Banks provide indirect financing for the market, with their low cash costs and ability to bring in financing from abroad. A broad estimate of this provided in our fieldwork is EUR40bn – 50bn. Therefore if banks cease this activity this would have a huge impact on the market.

The margining costs to larger compliance entities would also be high. If they were buying on behalf of other entities or acting as the counterparty in a futures, they would be moving in the same direction.

A so-called “agent” system would not work either, as even agents buying on others’ behalf need to be able to hold a registry account.²⁵ Encouraging a purely agent model between entities and banks could damage competition (compared to entities having 2-3 banks they can go to for prices). It would also be complex/impossible for small entities to provide express instructions to financials given their lack of expertise and their need for broader intermediation support, creating the perverse consequence that they might be more excluded from the markets.

The impact on exchanges would also be problematic for the smooth functioning of EU carbon markets. For example, without access to a Registry account, the clearing houses would not be able to fulfil their function on the exchanges and this would bring an end to the platforms.

²⁵ We understand that the European Parliament’s intention could have been to allow financial institutions to hold Registry accounts strictly for purchasing on others’ behalf. However this raises further issues of enforcement, not least regarding the definition of ‘on others’ behalf’, as this is what currently happens in practice when financials hold EUA inventory selling on later.

3 Barriers to Participation in EU ETS Markets

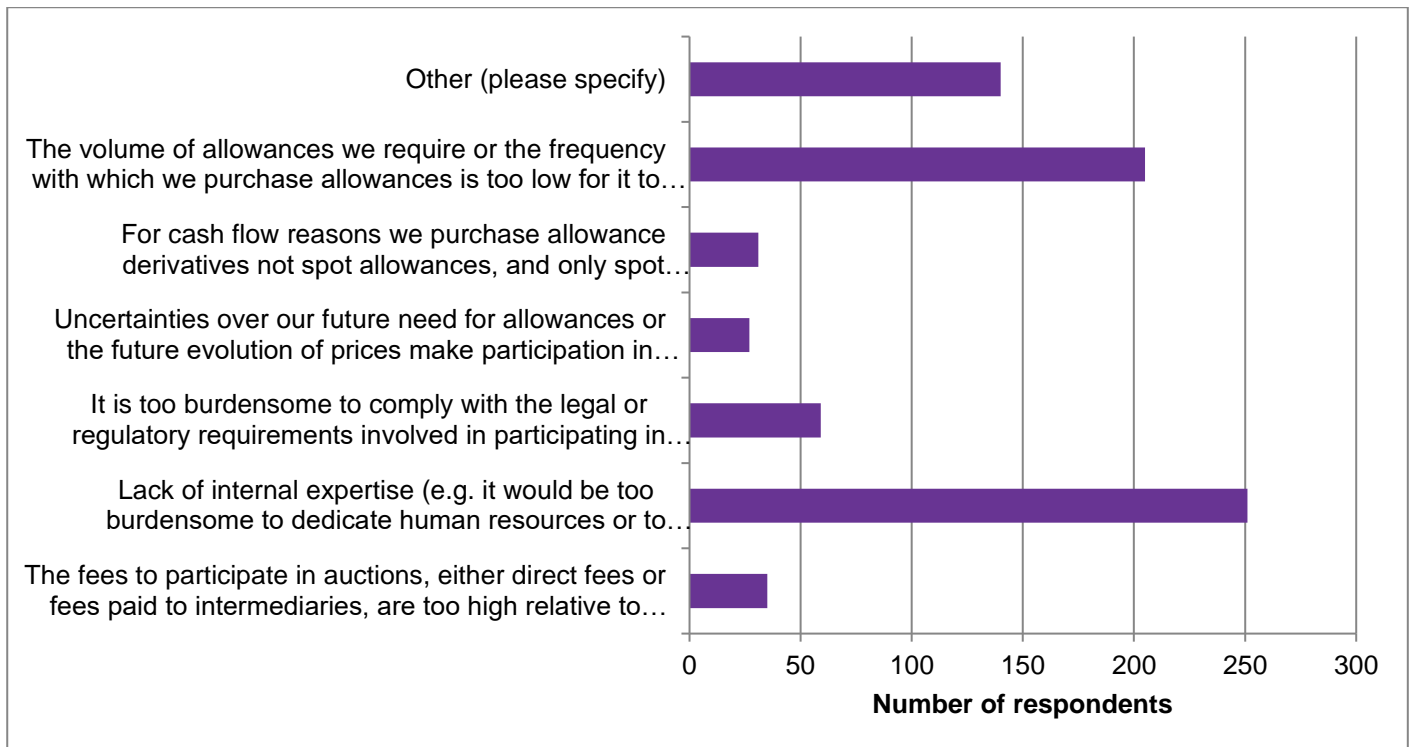
In answering this research question, we cover the following points as per the study Terms of Reference:

- Assess what legal constraints discourage operators to participate in auctions and in secondary markets of EUAs.
 - In particular assess the eligibility requirements in the Auctioning Regulation and requirements of secondary markets, including MIFID 2, Market Abuse, and EMIR applicable to compliance entities.
 - Assess the potential difficulties for SMEs and the sectorial and geographical differences.
- Assess the financial requirements and constraints for operators to participate in auctions and in secondary markets of EUAs.
 - In particular determine if there are minimum financial requirements for compliance entities to participate in auctions [and in secondary markets] of EUAs.
- Assess the economic hurdles and economic and operational considerations that affect operators when they determine participation in auctions and in secondary markets of EUAs.
 - In particular elaborate on the choice between direct participation or employing financial institutions to participate in auctions [and in secondary markets] of EUAs.

3.1 Barriers to participation in auctions

Our compliance entity survey shows that the two main reasons why entities do not participate directly in auctions are that they lack the internal expertise to do so and it would be too burdensome to acquire these, and that the amount of allowances they are required to buy is too low for it to be worthwhile engaging directly with the markets. This is shown in the figures below. Only a small minority state that associated fees are too high, as do those that consider legal or regulatory requirements are too burdensome.

Figure 3-1: Barriers to participating in auctions (compliance entities)

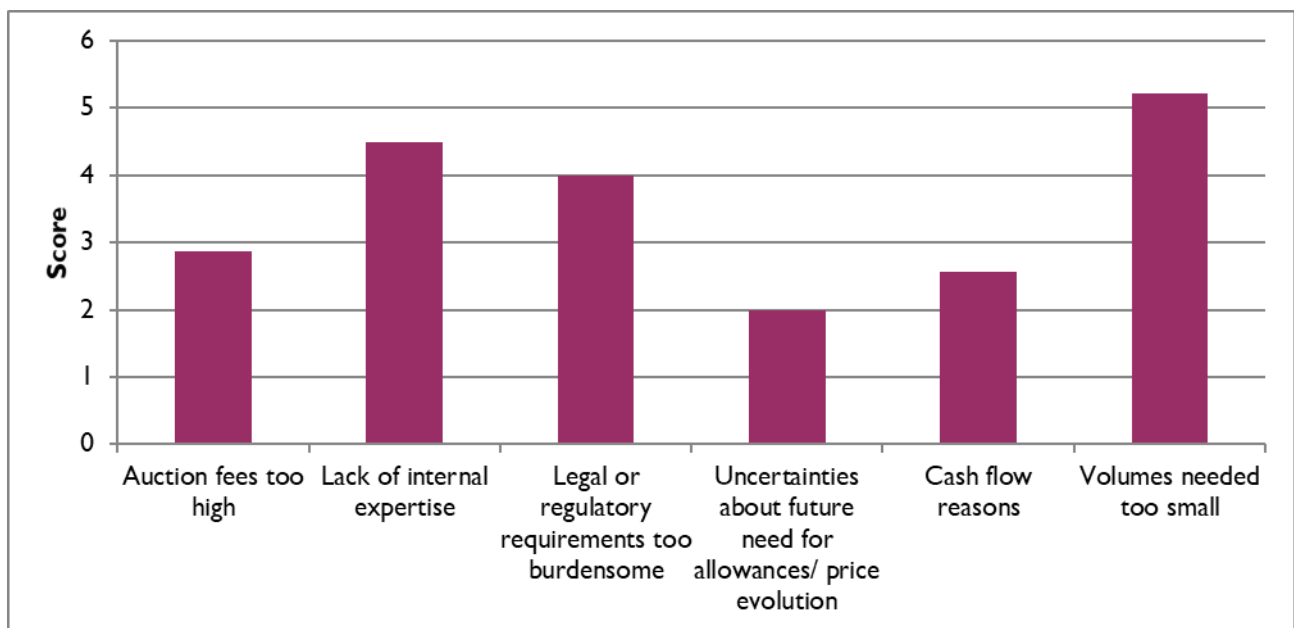


N=748

Q10: "If you do not participate directly in the auctions of emission allowances, please select the main reasons why: [can tick multiple]"

In their survey NCAs were asked to rank the factors by what they expected to be the order of importance, and the same two reasons received the highest scores. It is interesting to note that NCAs expected that the burden of legal or regulatory requirements would also be relatively important.

Figure 3-2: Barriers to participating in auctions (NCAs)



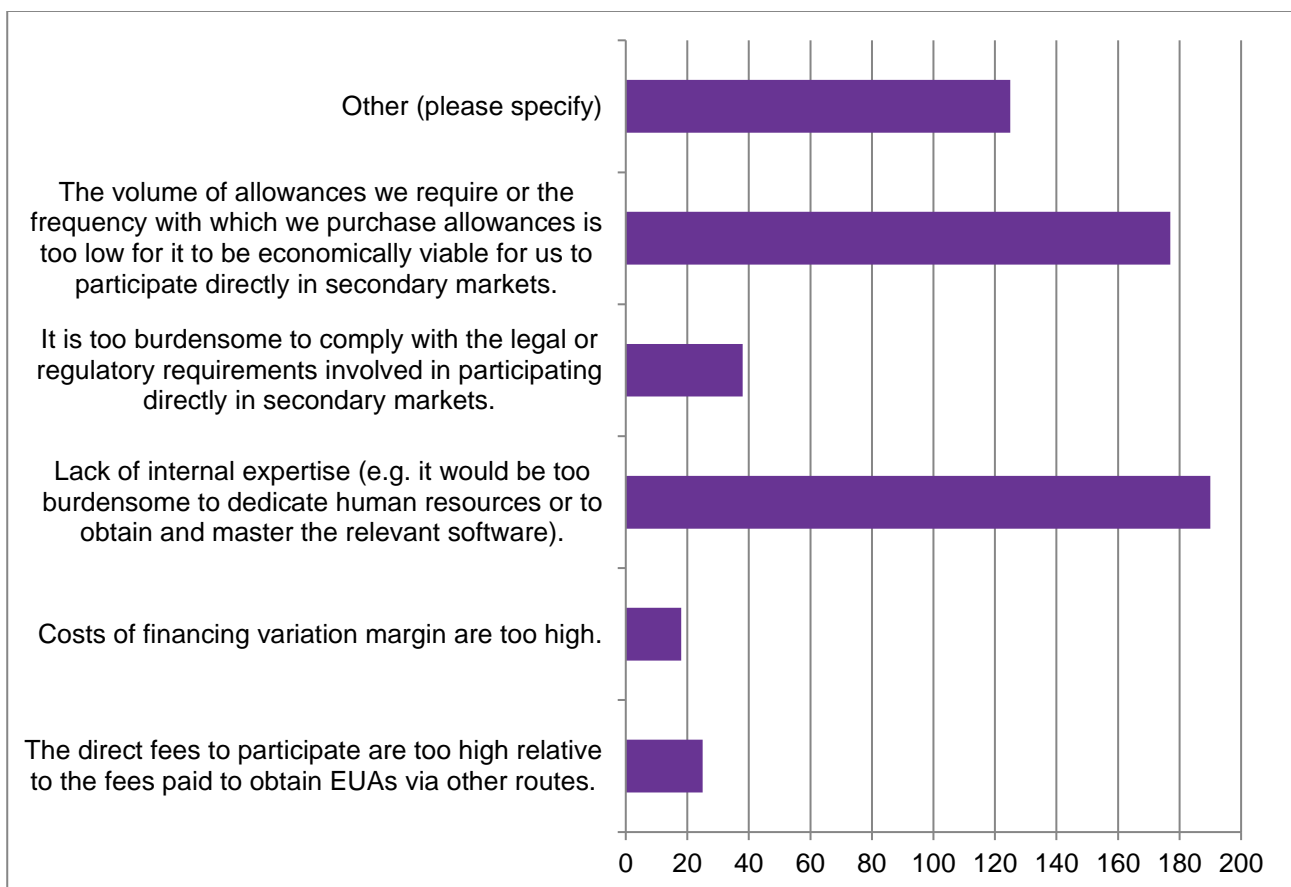
Q8: Please ranks the reasons why you think entities do not participate directly in auctions.

Our interviews confirm these findings. The compliance entities and financial firms we spoke to did not perceive there to be any material external barriers to those wishing to participate in the auctions. Participation was first and foremost driven by need – for the majority of entities the scale of their EUA needs is not sufficient to warrant them spending time and resources on their sourcing strategies. It is much easier simply to engage a broker or intermediary to sort this out for them. The feedback received implied that firms often did not get as far as even considering their internal expertise, such as the small scale of compliance purchasing within their business. A number of interviewees stated that should conditions change sufficiently in the future such that prices of EUAs increased materially or free allocation reduced, then they would invest in the necessary time and resources to enable them to participate directly in the markets (this also applied to secondary markets).

Financial firms providing services to large compliance entities (and the few large firms we interviewed directly) also stated that these firms did not wish to tie up large amount of their balance sheet holding physical EUAs throughout the year, and therefore preferred to buy derivatives rather than auctioned spot contracts. These findings confirm the important role that financial entities play for the smooth functioning of the ETS.

3.2 Barriers to participation in secondary markets

Similar trends emerge in relation to secondary markets, with the two driving reasons for low direct participation being a lack of need, and lack of relevant expertise. Again, fees and costs are of low importance. These findings were again corroborated in our stakeholder interviews.



N=573

Q11: "If you do not participate directly in the secondary market (both spot or derivatives markets), please select the main reason why: [can tick multiple]"

Very similar results emerged for the NCA's views on participation in secondary markets as with auctions (Q9 of their survey).

Our research into other ETS reveals that participation is also driven by need, and that external barriers are not common.

Box 4: Barriers to participation in other jurisdictions

Korea:

In Korea participation is low. This is mostly linked to supply-demand issues (majority of allowances allocated for free) and unrestricted banking (and thus availability of intermediaries). The small number of participants tends to mean fairly high transactions costs. There is a view that participation could be enhanced by increased information-sharing, development of in-house expertise in participating companies, and external consultancy support services.²⁶

UK:

In the UK the view appears to be that participation will not materially increase until the proportion of free allocation drops substantially.²⁷

3.3 Absence of relevant legal or regulatory barriers

We conclude from the above that, as matters stand, participation in neither auctions nor secondary markets is materially impeded by legal or regulatory barriers (including the eligibility requirements in the Auctioning Regulation and requirements of secondary markets, including MIFID 2, Market Abuse, and EMIR applicable to compliance entities). However, firms will naturally tend to report the barriers that are most salient to them. If those primary barriers – low volumes and the lack of expertise and relevant systems – were to be removed, it is conceivable that other barriers (including legal or regulatory barriers) would remain and come to the fore. But for now, if there are any such legal or regulatory barriers, they are not relevant constraints. In particular, our fieldwork cannot exclude the possibility that for smaller entities, with limited financial literacy, some barriers that are not apparent to them now would become more significant if and when they started to have an interest in participating in auctions in the future when free allocation has been reduced.

²⁶ <https://www.adb.org/sites/default/files/publication/469821/korea-emissions-trading-scheme.pdf>

²⁷ Joint Consultation: "Developing the UK Emissions Trading Scheme (UK ETS)" [online]

4 Policy Options and Recommendations

Reflecting the results of our survey and interviews, our findings and recommendations are as follows.

Key Findings

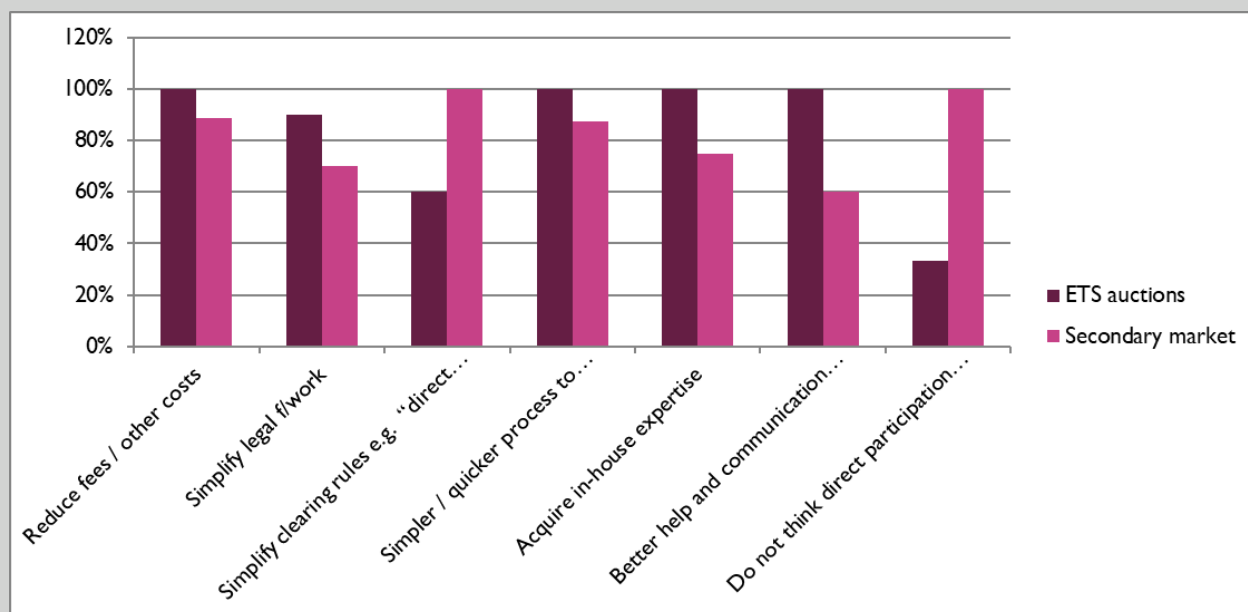
1. The current system is working well in terms of access to allowances. Firms do not consider there are material barriers to participation, do not consider themselves exploited by other economic agents (eg through monopoly power or the exploiting of informational asymmetries) and do not complain of any material forms of exclusion or regulatory/legal hurdles.
2. The operational literacy of compliance entities is low. Many if not most of them are not clear as to the difference between acquiring allowances in primary and secondary markets and obtaining them from financial or non-financial entities, or between obtaining derivatives from exchanges versus those written specially by the firms they purchase them from.
3. Compliance entities are highly dependent on financial entities for the acquisition of allowances and they find that an attractive arrangement – they do not want to have to obtain the expertise that would allow them to cut out financial entities. This is particularly true for SMEs but is also true for larger firms that have only a small need for allowances relative to their overall turnover. Furthermore, other compliance entities would be unwilling to take on the role of brokers should the participation of financial institutions be restricted, given the cash flow implications of holding physical allowances on their balance sheets.
4. For the largest firms there is materially more use of derivatives and slightly less use of direct purchases than for smaller firms.
5. Some compliance entities anticipate that, as allowances prices rise in future as scarcity is increased and free allocation drops, they will want to develop more expertise in allowances acquisition – in some cases have more of an option of engaging directly in auctions or markets rather than solely via intermediaries/brokers; and in other cases by developing more sophisticated strategies that they implement through their brokers (eg more use of forwards or futures and less dependence on spot purchases).

Policy Recommendations

1. Avoid any policy changes that radically overhaul the system. It is currently working well and major changes would risk disturbing that.
2. Do not exclude financial entities from participating in allowances markets, either auctions or secondary markets. They play a key role and without them compliance entities would be bereft of straightforward means to obtain allowances as required.
3. In anticipation of an increased future significance of allowances markets, sponsor, arrange or broker (perhaps through platforms such as ICE or EEX) training for compliance entities, explaining clearly for them issues such as the distinctions between auctions, secondary markets and acquisition via an intermediary or broker, how to participate directly in auctions or secondary markets and some of the broad strategies firms use (eg why some firms buy forwards or futures).

Box 5: The views of NCAs on policy measures

Figure 4-1: NCA views on policy measures



Q11: Which policy measures at an EU level could improve direct participation of compliance entities to the ETS auction or secondary markets?

Written views of NCAs

The measures listed above could reduce compliance costs. On the other hand, some measures could increase the risk in fraud activities. Any change or simplification in the existing legal framework should be carefully considered with a risk assessment for security and fraud prevention purposes.

Simplification with regard to the access to the primary and secondary market might encourage some companies to consider direct participation. However, simplifications to formal, i.e. regulated markets, always need to be weighed against the necessity of sensible legal requirements and/or market supervision safeguards which are vital to protect the overall market and its participants, i.e. ensuring market integrity. Besides, a large amount of the small and medium-sized enterprises (SMEs) covered by the EU ETS neither have a frequent need to purchase allowances nor would it be economically viable to create this expertise for direct market participation in most companies (e.g. setting up their own trading department). However, in this respect it is for them of utmost importance to guarantee a regulatory environment in which intermediaries can provide an efficient market access for this big group of ETS operators.

Since ETS compliance entities are companies whose activity is not related with financial services and commodities markets, NCAs believe that training, capacity building and communication activities are pivotal.

5 Appendix 1: Trade Association Interviews

Table 5-1: Participating trade associations

Trade Association	Member State	Sector	Interview or distribute
European Federation of Energy Traders	EU	Power	Distribute
International Emissions Trading Association (IETA)	EU	Emissions trading	Interview and distribute
Eurelectric	EU	Power	Interview and distribute
Euroheat & Power	EU	Power	Distribute
European Federation of Local Energy Companies (CEDEC)	EU	Power	Distribute
European Network of Transmission System Operators for Gas (ENTSOG)	EU	Power	Distribute
Association for Financial Markets in Europe (AFME)	EU	Financial	Interview and contacts
European Banking Federation (EBF)	EU	Financial	Interview
European Federation for Construction Chemicals (EFCC)	EU	Chemicals	Distribute
European Chemicals Agency (ECHA)	EU	Chemicals	Distribute
Cembureau	EU	Cement	Interview and distribute
The European Ceramic Industry Association	EU	Ceramics	Interview and distribute
BDEW (Federal Association of Energy and Water Management)	DE	Power	Distribute
VCI (association of the chemical industry)	DE	Chemicals	Distribute
AGFW (Energy Efficiency Association for Heating, Cooling and CHP)	DE	District Heating	Interview
Danish District Heating Association	DK	District Heating	Interview (via email)
Finnish District Heating Association	FI	District Heating	Interview (via email)

6 Appendix 2: Using the Results to Determine How Firms Obtain Their Allowances

As discussed in the main report, we conducted a survey that covered a fairly large number of compliance entities (918). That survey asked firms how they obtained their allowances. It did so in multiple ways. That meant that, although firms themselves appear not to make the distinctions that would have enabled them to answer our questions about the sourcing of allowances directly, we are able to cross-match their answers to produce what we consider a much more robust view as to how their allowances are actually sourced. In this Appendix we explain how that was done.

6.1 Raw answers to Q5

Question 5 of the survey asked firms: *“How do you purchase/acquire allowances to fulfil your emissions obligations? (For information, in the “spot” market allowances are traded for immediate delivery, and in the “derivative” market futures and/or options are traded.) [state the approximate percentage of allowances per year for each source or leave blank if zero]”* At first sight this question might have been expected to produce the answer as to how firms purchase or acquire the allowances to fulfil their emissions obligations. However, there are a number of reasons one might have been suspicious, *a priori*, as to whether that would have worked as hoped.

Primary amongst these is that for many firms the process of obtaining allowances is a “black box”. They have an entity that they deal with (typically, but not always, a financial entity) that obtains their allowances for them. They do not have a clear view on how that entity obtains the allowances they receive – whether via auctions, secondary markets or derivatives markets. Even when they are clear that they are acquiring derivatives from an entity, it is unclear to them whether the financial entity has created that derivative itself or obtained the derivative from an exchange. These factors, alongside other issues such as more straightforward entry errors (eg a number of firms reported the number of allowances they obtained from different sources, rather than the percentages), mean that the raw answers provided to Q5 require adjustment.

6.2 Treated answers

The results we report for how firms obtain their allowances use not only firms’ responses to Q5 but also their answers to later questions. Other questions ask about firms’ use of agents or intermediaries, about whether they do or do not use auctions and about their participation in secondary markets and their use of derivatives.

The Treatment proceeds as follows.

- Where firms’ answers to Q5 sum to more than 100, we interpret them as having entered the number of allowances rather than the percentage.
- Where firms’ answers to Q5 sum to less than 100, we use “Other” to make up the percentage to 100.

- Where firms have answered Q5 with multiple sources (either before or after adjusting “Other” to make the sum 100), we take their answer as given.
- When firms answered only one source in Q5 or no source in Q5 but did give usable answers indicating the origin of their allowances to other questions, then if they indicated only one source in other questions we identified that source and made it 100. If they identified two sources we identified them and made them each 50. If they identified three sources (auctions, spot markets and derivatives) we identified them and made them all 100/3 (there were three cases of this occurring).
- 124 firms did not provide any usable information regarding the sources of their allowances and were excluded from the calculation.

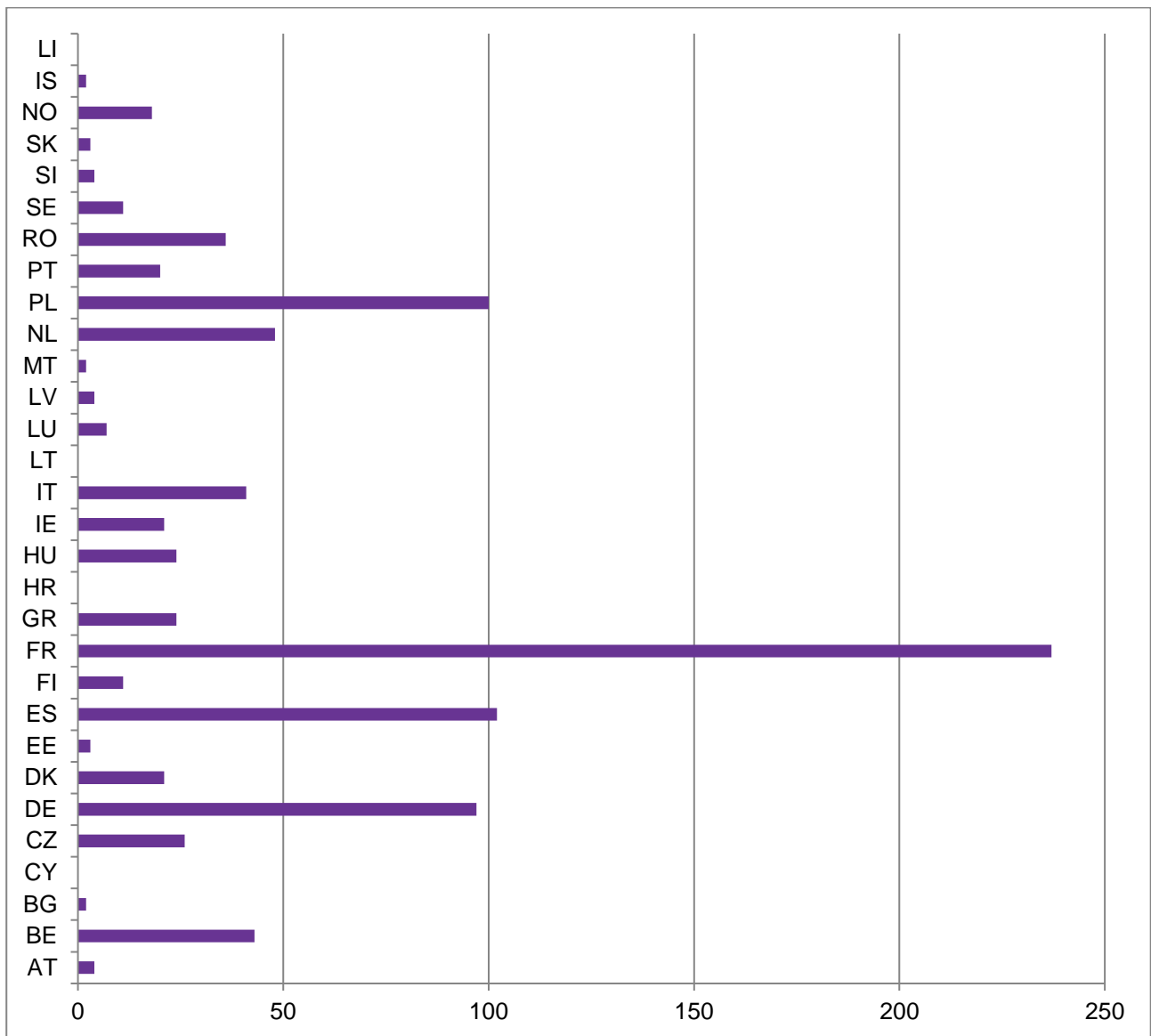
After applying these adjustments and rules, we obtained the following figures for how firms acquire their allowances. The “By firms” figures are expressed as a percentage of the firms in the survey (excluding the 124 firms for which no usable data was obtained). The “By allowances” figures use the data firms report on how many allowances they use (Q3) to weight the results.

Table 6-1: How firms obtain their allowances

	Auctions	Spot (Exchange)	Derivatives (Exchange)	Direct	Other (eg parent company or free allocation)
By firms	1%	7%	5%	79%	8%
By allowances	1%	7%	10%	77%	6%

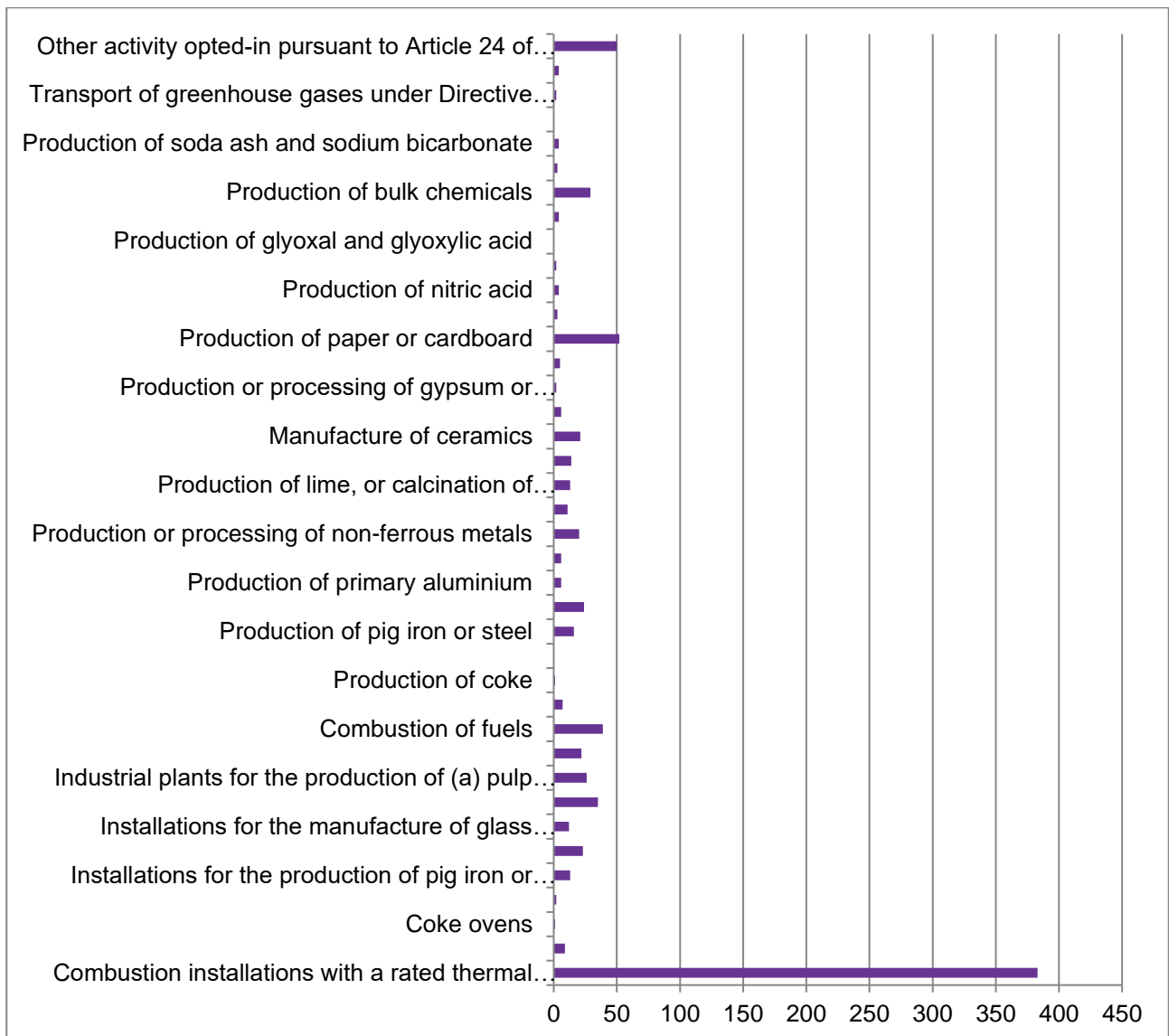
7 Appendix 3: Compliance Entity Survey Responses

7.1.1 Q1: “In which country (Member State of the EU or country of the EEA) is your firm located? [select only 1]”



n = 911

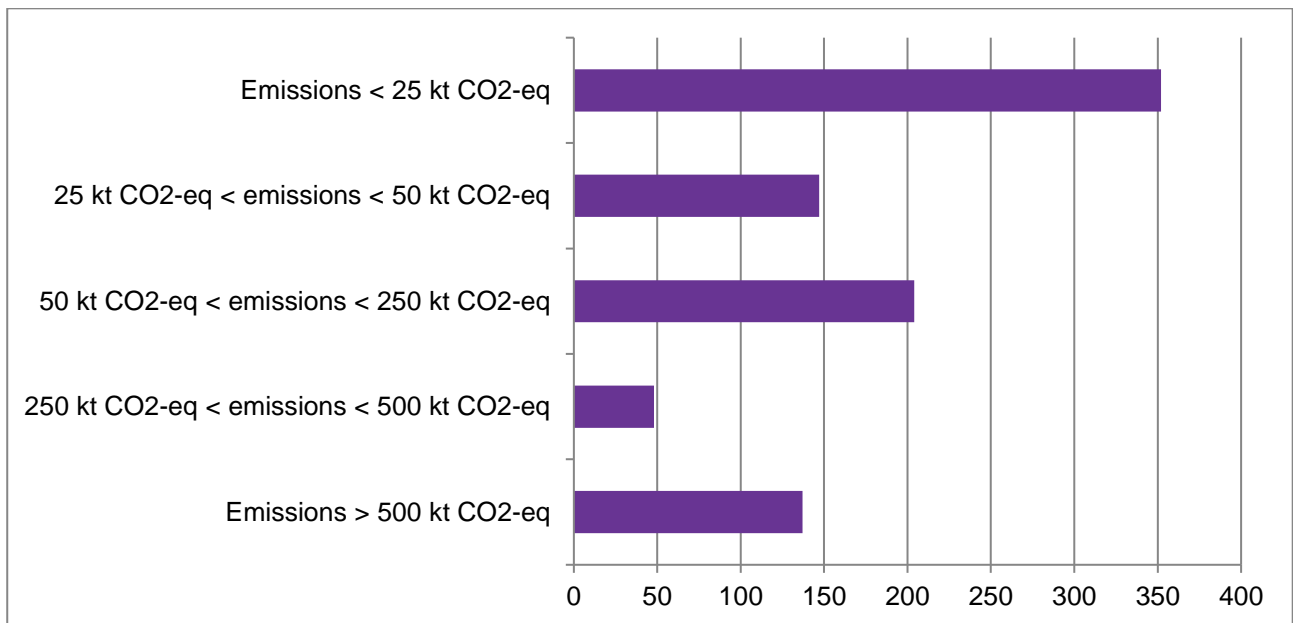
7.1.2 Q2: “Please select from the drop down list the Activity Sector that best represents your business [select only one]”



n = 874

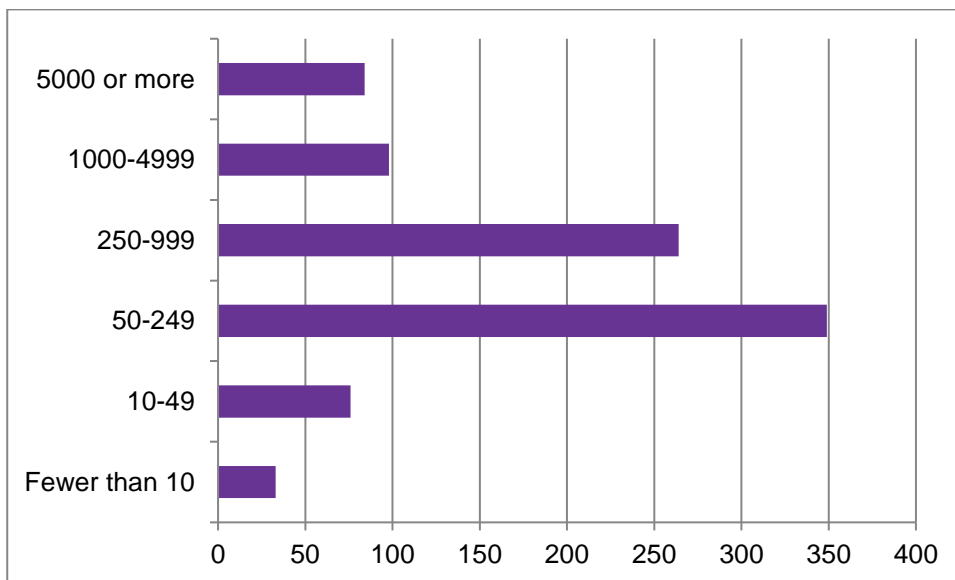
We note that it is unsurprising that combustion installations have the largest number of responses, given the nature of EUAs. We observe that there is a healthy spread of other sectors.

7.1.3 Q3: “What were your total verified emissions at April 2022 / most recent known year? [tick one only]”



n = 888

7.1.4 Q4: “What is the approximate number of full-time staff of your firm? [tick one only]”



n = 904

7.1.5 Q5: “How do you purchase/acquire allowances to fulfil your emissions obligations? (For information, in the “spot” market allowances are traded for immediate delivery, and in the “derivative” market futures and/or options are traded.) [state the approximate percentage of allowances per year for each source or leave blank if zero]”

Table 7-1: Raw responses to Q5

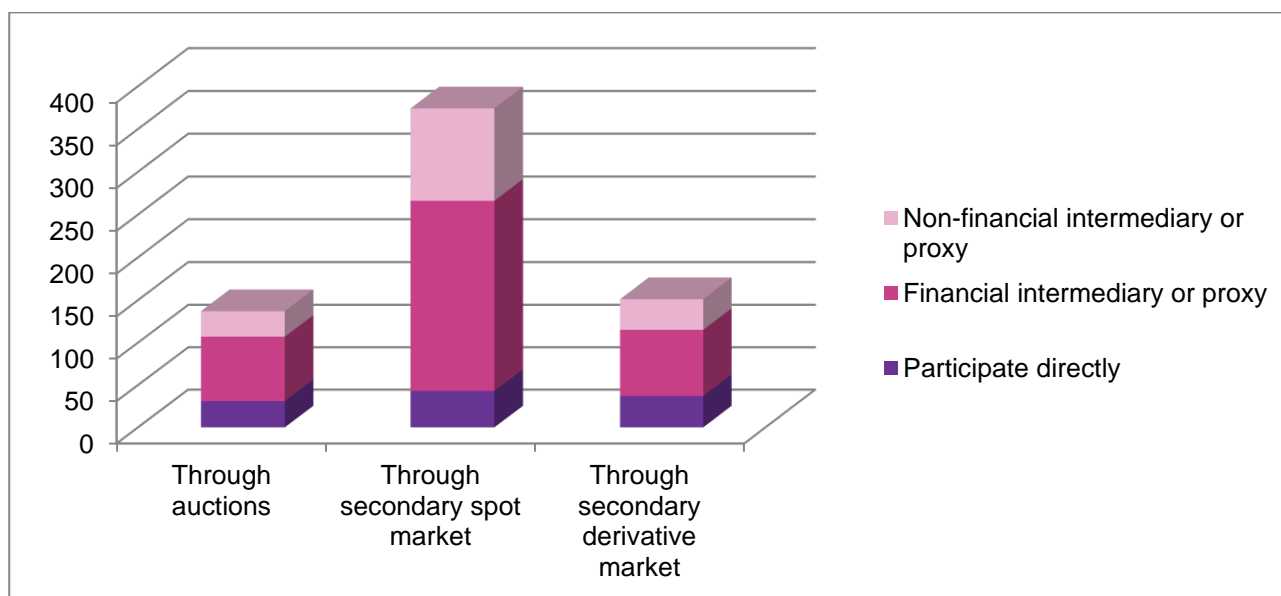
	Through auctions	Through secondary spot market	Through secondary derivative market	Direct purchase from another entity	Other
Raw	2%	16%	45%	36%	2%

Table 7-2: Assessed sourcing of allowances using answers to all questions

	Auctions	Spot (Exchange)	Derivatives (Exchange)	Direct purchase from another entity	Other (eg parent company or free allocation)
By firms	1%	7%	5%	79%	8%
By allowances	1%	7%	10%	77%	6%

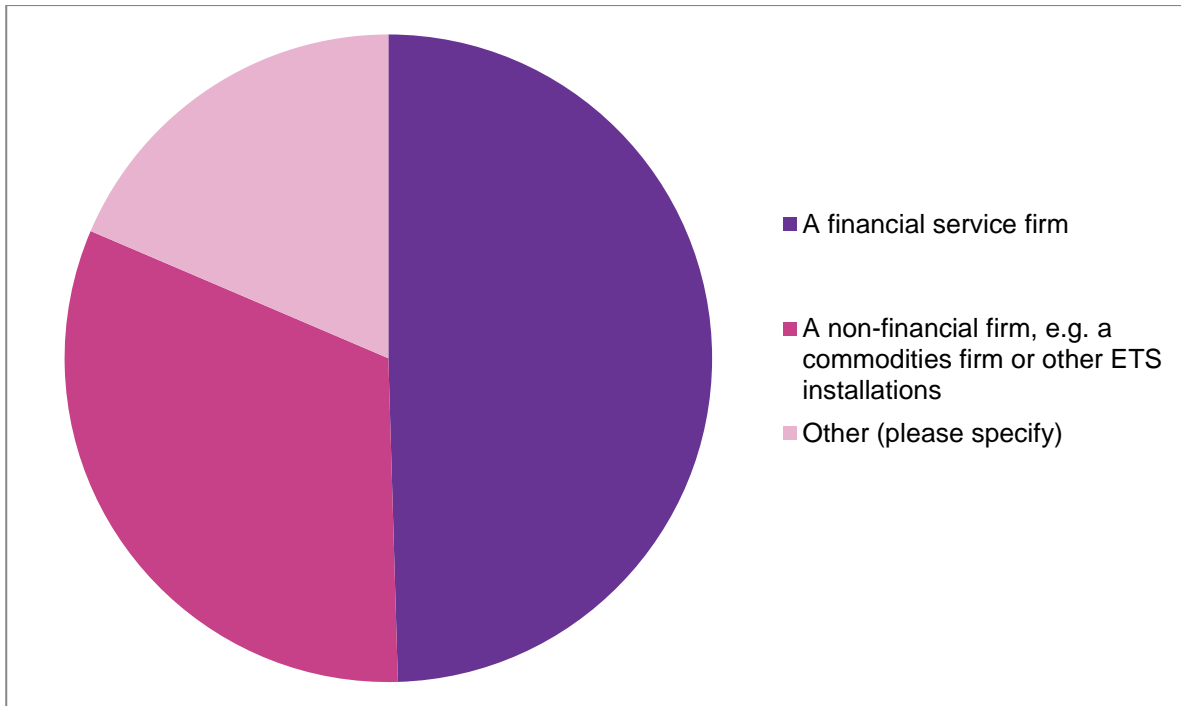
We explain the figures above in Appendix 2.

7.1.6 Q6: “For those of your emissions allowances that you obtain via auctions or secondary markets, do you (in the main) obtain them by participating directly or do you operate via an intermediary or proxy, and if the latter (mainly) what sort of intermediary? (For direct purchases see next question.)”



n = 662

7.1.7 Q7: “If you buy directly from another firm, is this usually: [tick one only]”

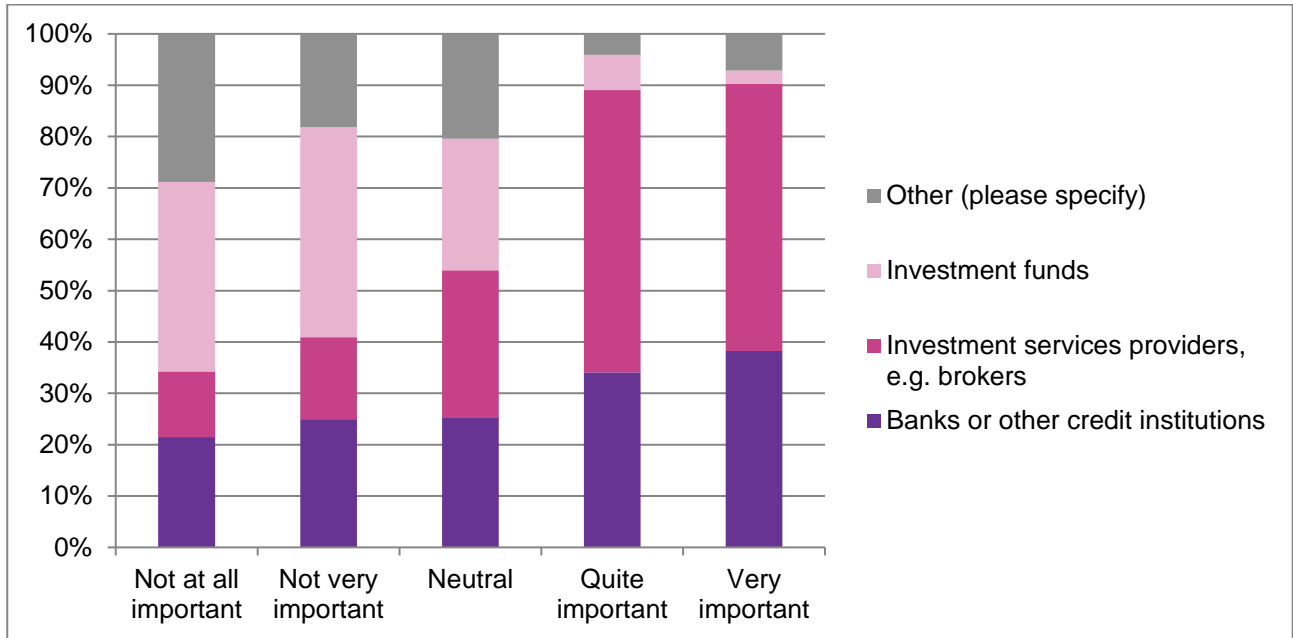


n = 533

Examples of “Other” responses here include:

- Trading company
- Parent company
- Another company within the same group
- A central group service
- The firm’s boiler room operator
- A subsidiary that provides energy services
- Energy trader
- Consulting company
- Other companies within the industry
- Don’t buy – receive free allocation

7.1.8 Q8: “If you use financial institutions as one of your main routes for acquiring allowances, to what extent are these different types of financial institutions important to you when acquiring them?”

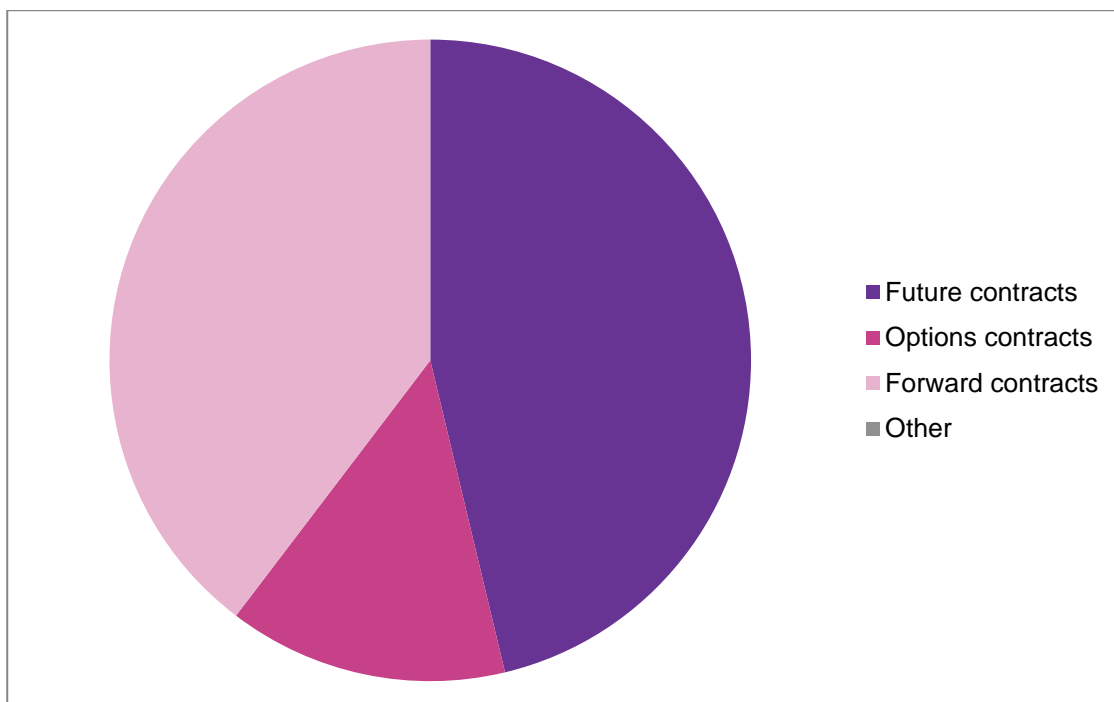


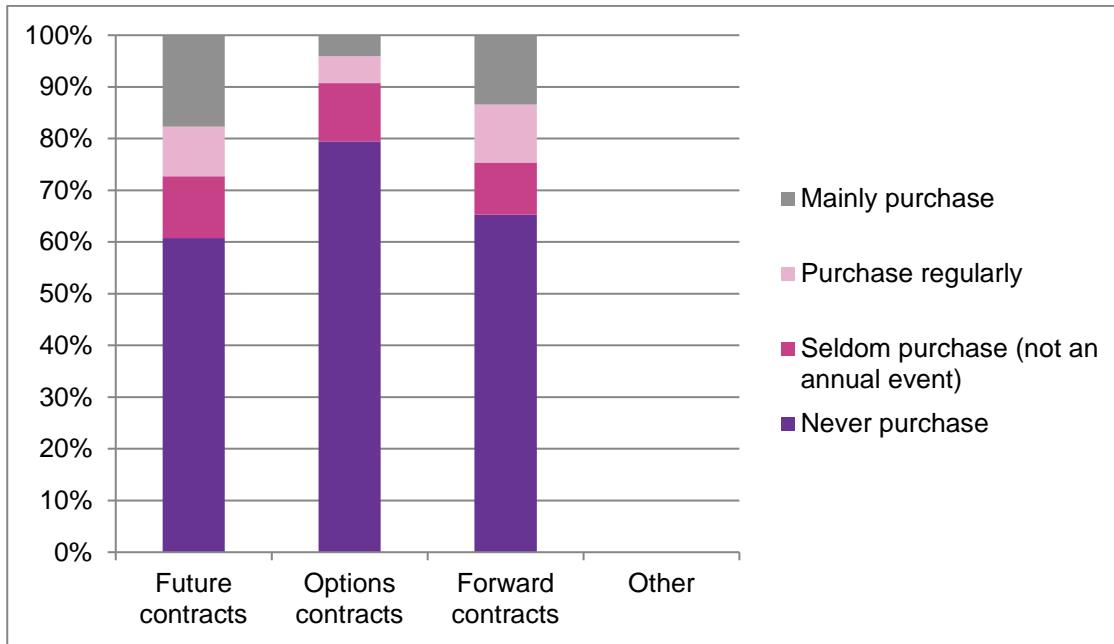
n = 1,367

We see here that investment services providers are the most important source, with Banks or other credit institutions also being fairly important.

7.1.9 Q9: “If you purchase derivatives of emission allowances, what types do you purchase and how often?”

Figure 7-1: Percentage breakdown of main or regular purchases of derivatives

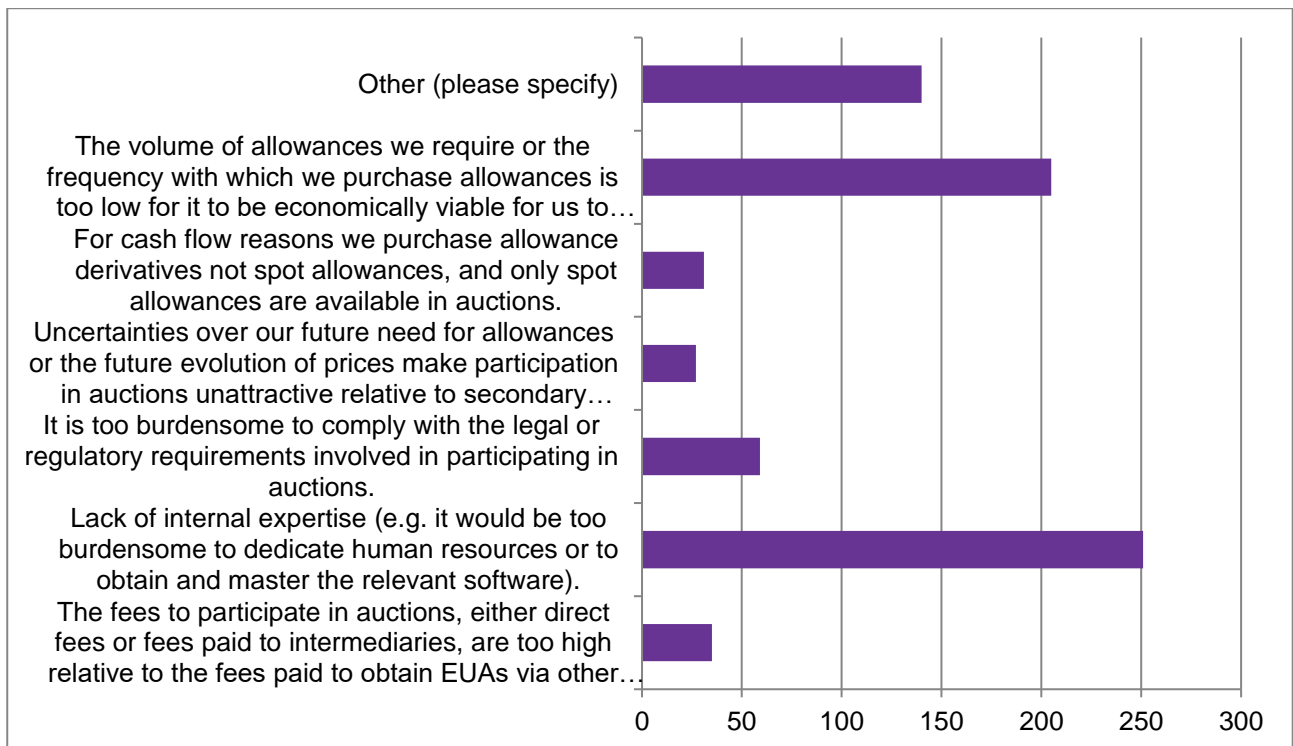




n = 1,097

We see here that most purchases are of futures or forwards, with options playing a minor role, seldom if ever purchased by the vast majority of firms.

7.1.10 Q10: “If you do not participate directly in the auctions of emission allowances, please select the main reasons why: [can tick multiple]”



n = 748

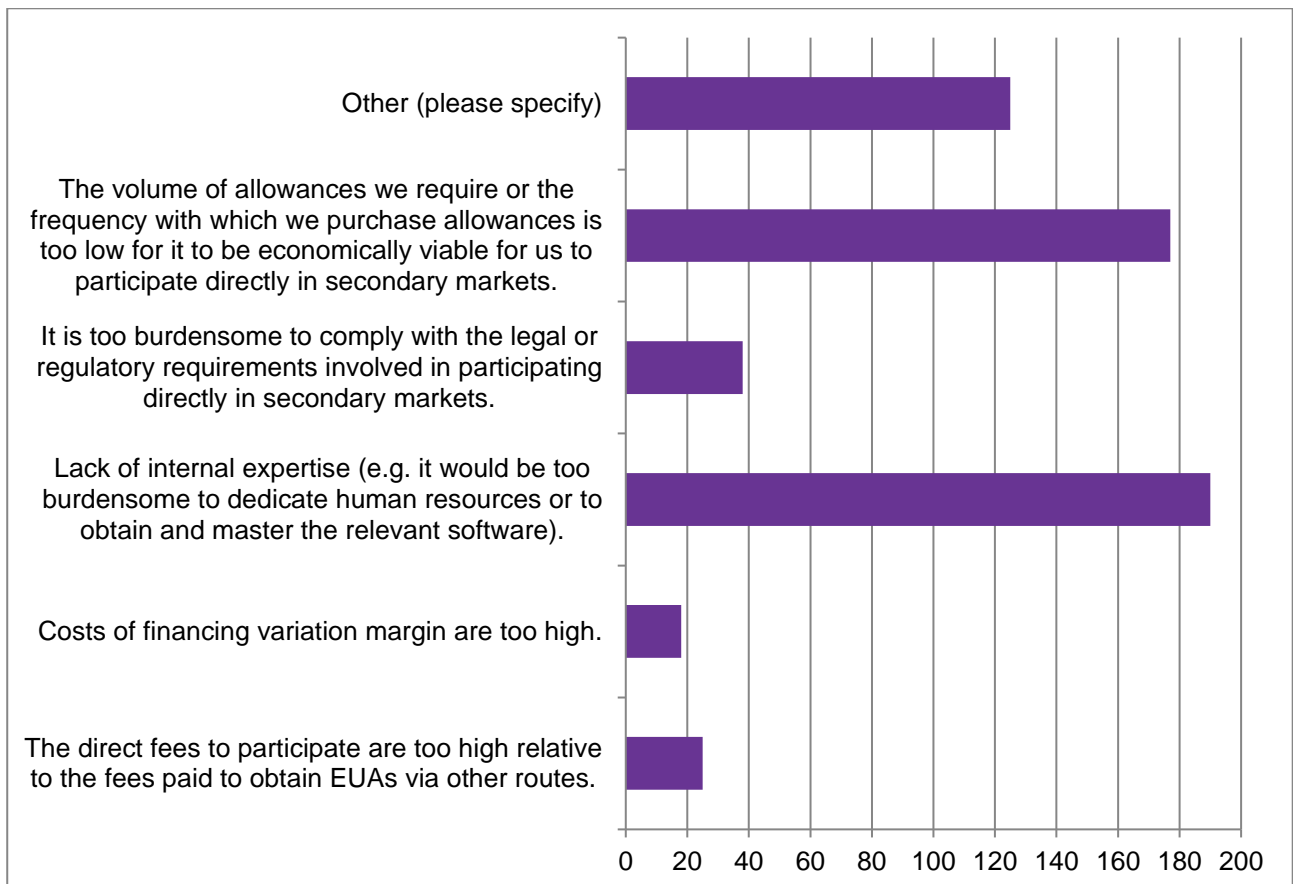
Here we see that firms emphasize their lack of internal expertise or the relatively low volumes they require as the key reasons for not participating in the auctions.

We are interested to note that relatively few of them report that the issue is that they mainly want forwards or futures not spot allowances and therefore have no demand for the products available in auctions. We suspect that that may be a matter of the most obvious factors to the firms being the operational challenges and the volume, and they do not think through to the question of whether they would really want the products on offer even if they were logistically easy to obtain. A number of firms reported that their parent company obtains allowances for them or they have allowances via “free” allocation.

Examples of “Other” responses here include:

- Only occasional need to buy
- Procurement by parent company
- No need to buy allowances as have sufficient free allocation
- Still have a surplus of allowances remaining from a discontinued operation that held allowances
- Subsidiaries are not authorised to acquire their own allowances
- Simplicity and flexibility
- Never checked out the option of using auctions
- Acquiring allowances is not our core business

7.1.11 Q11: “If you do not participate directly in the secondary market (both spot or derivatives markets), please select the main reason why: [can tick multiple]”



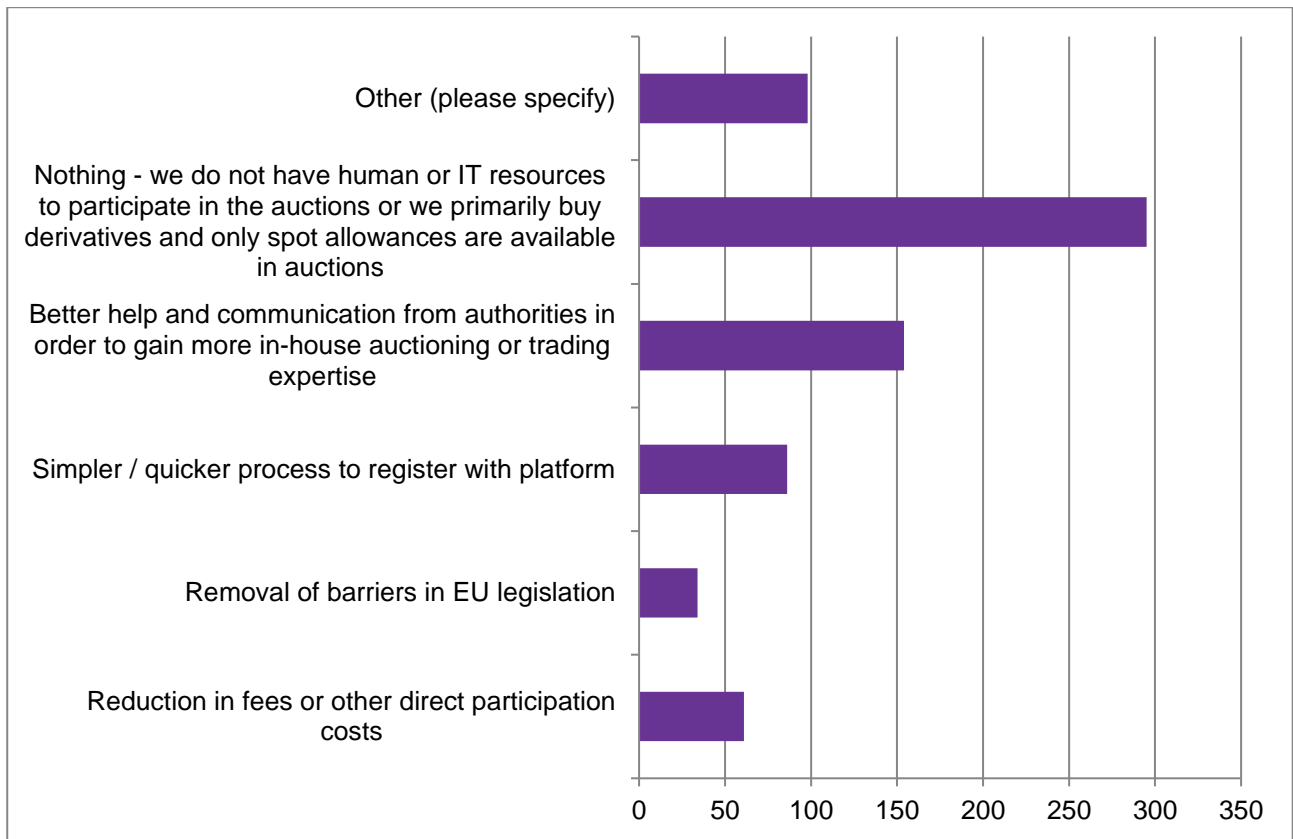
n = 573

As with the auctions, we note that the main factors identified are those relating to volumes required and expertise. A number of firms reported that their parent company obtains allowances for them or they have allowances via “free” allocation.

Examples of “Other” include:

- Only buy occasionally, so use a broker
- Free allocation is sufficient
- Make inter-company purchases instead
- Not bought in these markets yet
- Match production to the free allocation received
- Buy from Group

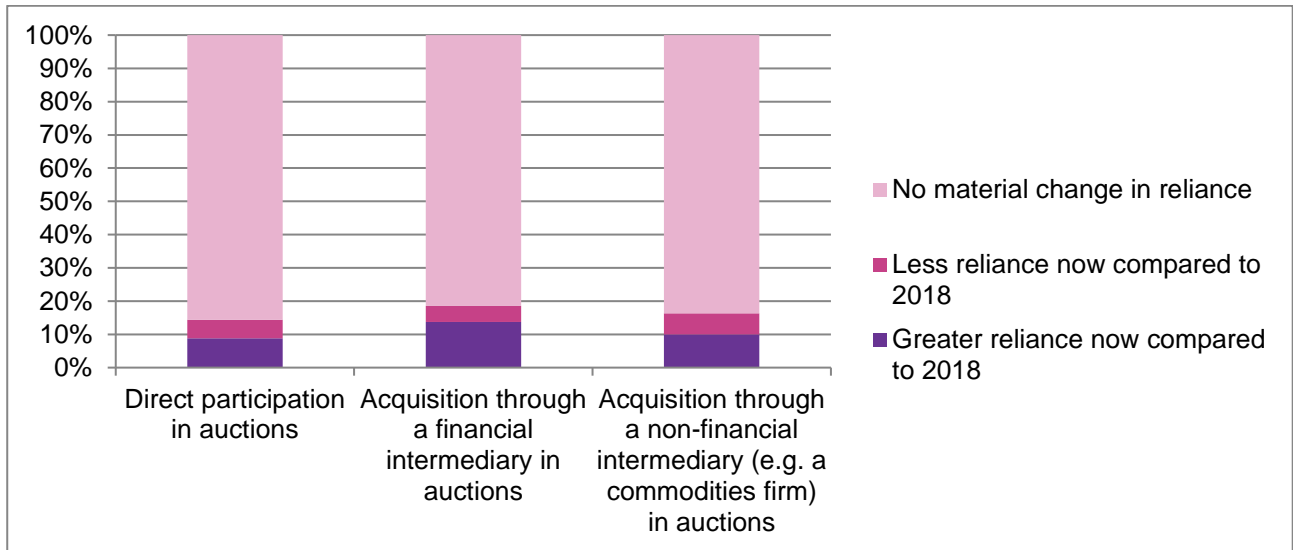
7.1.12 Q12: “What changes would make you consider participating directly in auctions?
[can tick multiple]”



n = 728

Here it is noteworthy that a significant bloc of firms felt that nothing would make them consider participating in auctions. Amongst those that did feel they might be persuaded to participate, the main answer was better help from the authorities in gaining expertise in how to participate.

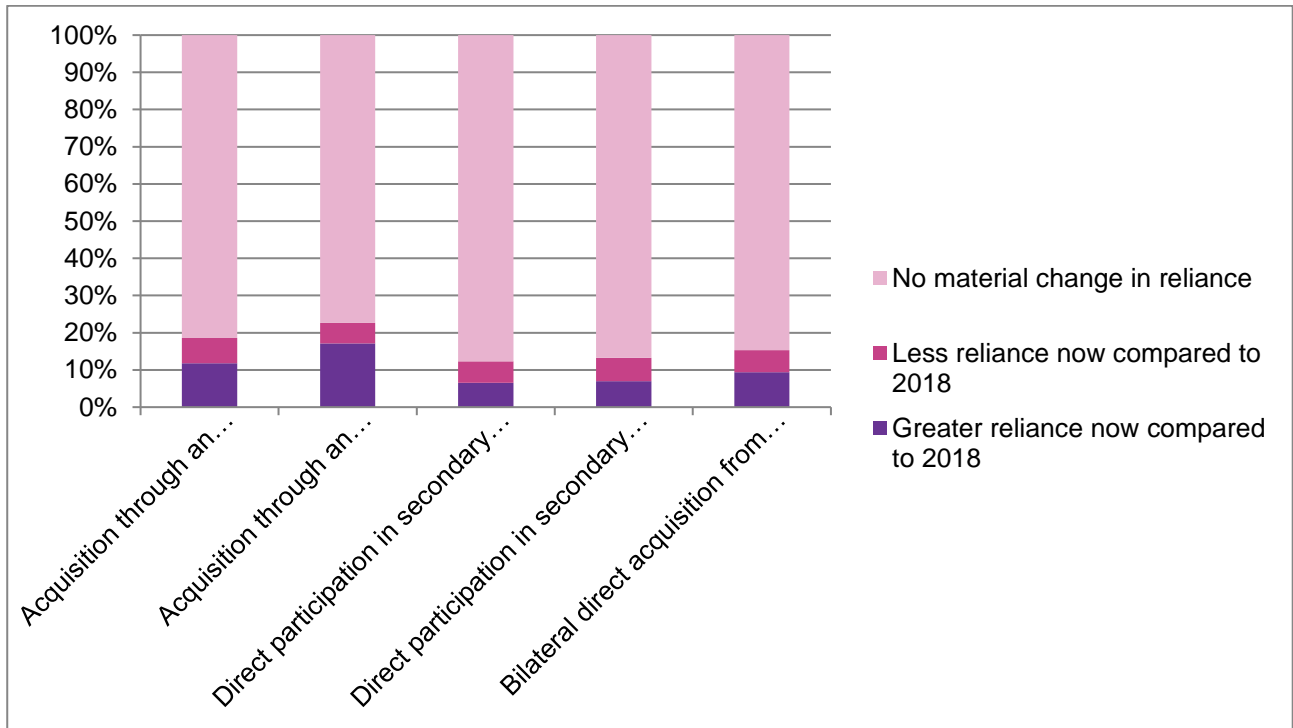
7.1.13 Q13: “Auctions: For the following sources, please identify whether you currently place greater or less reliance on compared to 2018 (when the EU-ETS was revised). If you were not active in the European carbon market at that time, please compare your current activity to 2021.”



n = 1,243

For most firms reliance on auctions is unchanged, but insofar as there is some change it tends to be an increase (perhaps reflecting reduced availability of “free” allocation) and in particular an increased use of financial intermediaries.

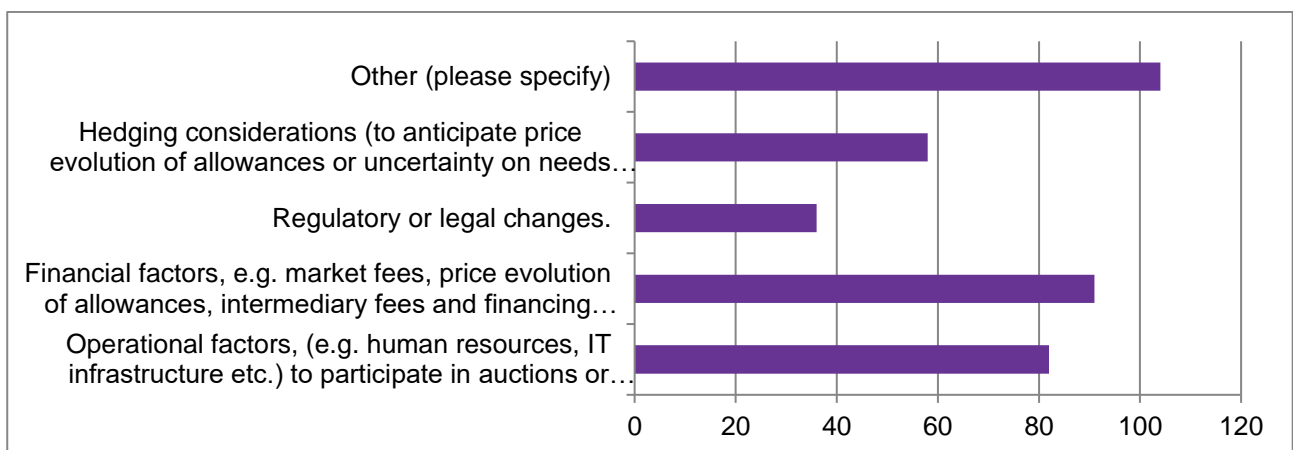
7.1.14 Q14: “Secondary market: For the following sources, please identify whether you currently place greater or less reliance on compared to 2018 (when the EU-ETS was revised). If you were not active in the European carbon market at that time, please compare your current activity to 2021.”



n = 2159

As with auctions, the net tendency for secondary market participation is an increase over time, and in particular increased participation via intermediaries.

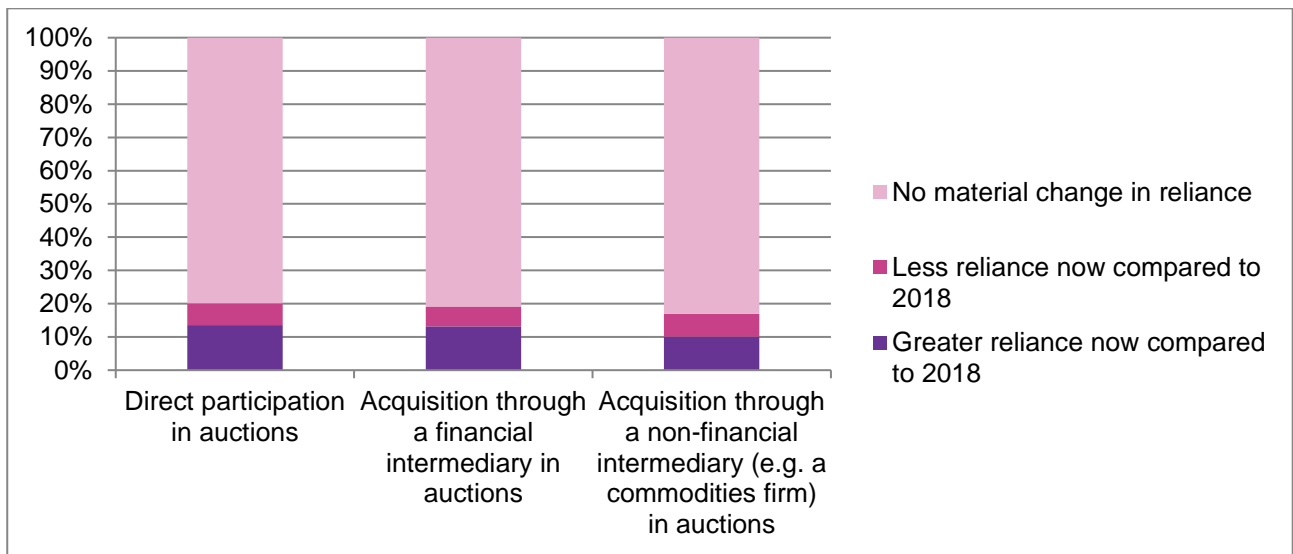
7.1.15 Q15: “Please select the main reason for this change [can tick multiple]”



n = 371

The only clear pattern here is that the change over time is not, in the main, driven by regulatory or legal changes.

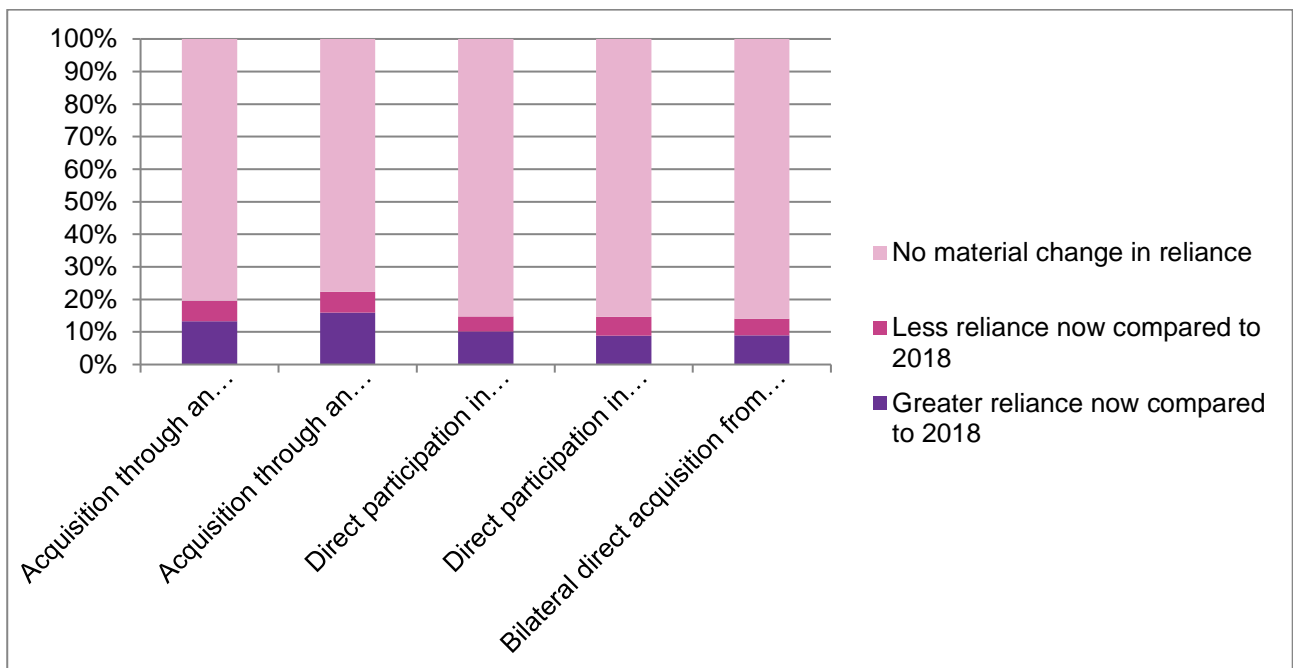
7.1.16 Q16: “Auctions: For the sources below, please indicate whether you expect to place greater or less reliance in the future”



n = 1,335

Respondents appear to expect some increased use of auctions over time, either directly or through a financial proxy.

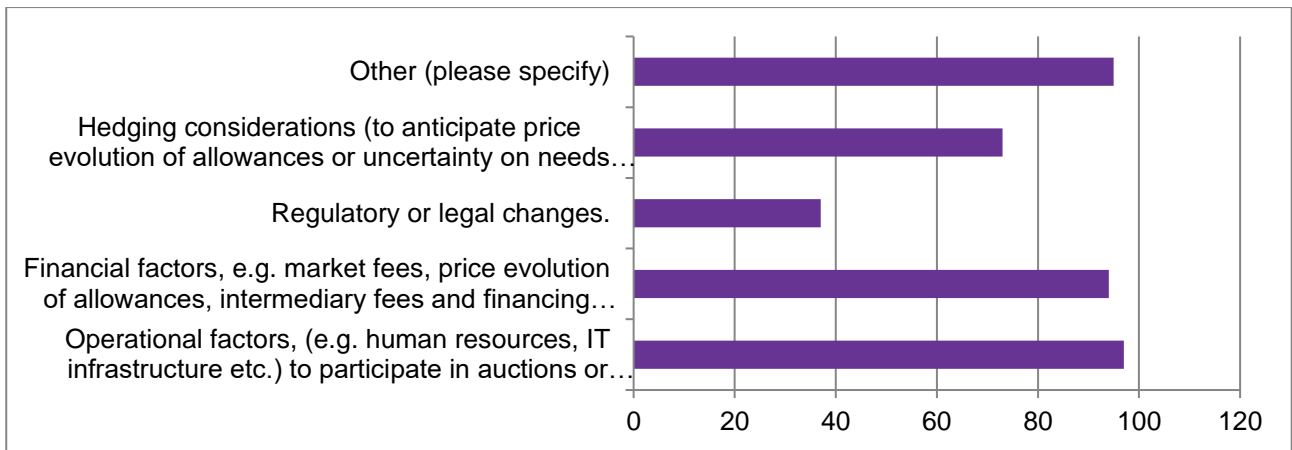
7.1.17 Q17: “Secondary market: For the sources below, please indicate whether you expect to place greater or less reliance in the future”



n = 2,274

Firms appear to anticipate increased acquisition via secondary markets in the future, mainly through intermediaries.

7.1.18 Q18: “Please select the main reason for this change [can tick multiple]”



n = 396

Again there appears to be no one dominant reason for this expected future increase. The only clear message is that it is not expected to be driven by regulatory or legal changes.

8 Appendix 4: Sector definitions

Combustion or fuels	Refining	Metals	Chemicals	Other manufacturing or production	Other
Combustion installations with a rated thermal input exceeding 20 MW	Mineral oil refineries	Metal ore (including sulphide ore) roasting or sintering installations	Production of carbon black	Installations for the production of cement clinker in rotary kilns or lime in rotary kilns or in other furnaces	Aircraft operator activities
Coke ovens	Refining of mineral oil	Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting	Production of nitric acid	Installations for the manufacture of glass including glass fibre	Capture of greenhouse gases under Directive 2009/31/EC
Combustion of fuels		Metal ore roasting or sintering	Production of adipic acid	Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain	Transport of greenhouse gases under Directive 2009/31/EC
Production of coke		Production of pig iron or steel	Production of glyoxal and glyoxylic acid	Industrial plants for the production of (a) pulp from timber or other fibrous materials (b) paper and board	Storage of greenhouse gases under Directive 2009/31/EC
		Production or processing of ferrous metals	Production of ammonia	Production of cement clinker	Other activity opted-in pursuant to Article 24 of Directive 2003/87/EC
		Production of primary aluminium	Production of bulk chemicals	Production of lime, or calcination of dolomite/magnesite	
		Production of secondary aluminium	Production of hydrogen and synthesis gas	Manufacture of glass	
		Production or processing of non-ferrous metals	Production of soda ash and sodium bicarbonate	Manufacture of ceramics	
				Manufacture of mineral wool	
				Production or processing of gypsum or plasterboard	
				Production of pulp	
				Production of paper or cardboard	

