

ANNEX 2

VALIDATION OF RESPONSES

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Validation was a continuous process, with checks undertaken within five days of the survey response being entered into the database. This was done by including all the validation checks into the data entry Access database. The database was designed to run all the validation checks.

A complete list of the validation tests was run and companies were then contacted within the specified time frame. This was to ensure that the delay between receiving the questionnaire and contacting the company was minimised. In general, the enhanced validation procedure identified cases, which either fell outside of a pre-defined range or had figures which needed to be checked against the questionnaire or with the company itself. A two-stage approach was carried on from previous surveys:

- Stage 1: Scanning of questionnaire results prior to data entry; and
- Stage 2: Complete range of checks for all the companies

1. STAGE 1

Prior to data entry questionnaires were checked for completion before entering into the database. Although the questionnaire emphasises that businesses should fill in every box, it is possible that some of those with zero or minimal expenditure will fail to do this. Hence, judgement was required to ascertain when a business needed to be re-contacted to check empty boxes.

Generally businesses were re-contacted only if it appeared likely from the other entries on the questionnaire that the business had expenditure for that question. Re-contacting companies to ensure every box was filled would have been an overwhelming task, although improvements in the database entry stage meant that blank responses were flagged instantly, thus making the task more manageable.

2. STAGE 2

In the second stage a query was run on an access database that ran all the validation tests. These are described in **Figure 1**, and can be categorised as follows:

- Internal consistency checks (reference Test Numbers 7 to 12)
- Possible errors in data entry, IDBR database or questionnaire return (1 to 6 and 13 to 24)
- Wastewater checks (19 and 20)

- Empty boxes (25 to 27)
- Cost Savings Checks (29 to 38)

Figure 1 Validation Test Summary

| Test Number | Test Explanation |
|-------------|---|
| 1 | End-of-Pipe as % of Turnover |
| 2 | Total integrated as % of Turnover |
| 3 | Total operational as % of Turnover |
| 4 | End-of-Pipe / Employees |
| 5 | Total integrated / Employees |
| 6 | Total operational / Employees |
| 7 | In-house+External = Total Operational |
| 8 | In-house percentages = 100 |
| 9 | Operational Expenditure media percentages = 100 |
| 10 | Integrated Expenditure media percentages = 100 |
| 11 | Special Waste < total Waste |
| 12 | Individual external costs = External total |
| 13 | Environmental Capex as % of Total Capex |
| 15 | Savings as % of Turnover |
| 17 | Turnover / employees too large |
| 18 | Turnover / employees too small |
| 19 | Wastewater / Employees |
| 20 | Wastewater / Employees |
| 21 | Turnover as % of IDBR Turnover |
| 22 | Turnover as % of IDBR Turnover |
| 23 | Employees as % of IDBR Employees |
| 24 | Employees as % of IDBR Employees |
| 26 | All Questions have main fields filled |
| 27 | Media percentages completed in full |
| 28 | 2.2b enviro friendly <= 2.2a integrated processes |
| 29 | Cost savings- raw material as % of Turnover is >= 2% |
| 30 | Cost savings- water use as % of Turnover is >= 2% |
| 31 | Cost savings - energy use as % of Turnover is >= 2% |
| 32 | Cost savings - waste disposal as % of Turnover is >= 2% |
| 33 | Cost savings - other as % of Turnover is >= 2% |
| 34 | Cost savings - raw material >= 10 000 |
| 35 | Cost savings- water use >= 10 000 |
| 36 | Cost savings - energy use >= 10 000 |
| 37 | Cost savings - waste disposal >= 10 000 |
| 38 | Cost savings - other >= 10 000 |
| 39 | CAPEX >= 15% of Turnover |
| 40 | 2.2b EnviroFriendly + EOP >= CAPEX |
| Other | Additional queries. |

The Access database produced a list of companies that failed one or more of the tests listed in **Figure 1**. These questionnaires were then checked and four possible courses of action ensued:

- a) The data entered was found to be incorrect and was changed;
- b) The data was entered correctly, but there was an obvious error on the questionnaire. This was changed and recorded;
- c) The data was entered correctly and there was no obvious error on the questionnaire. No further action was necessary; and
- d) It was unclear what the answer should have been just by looking at the questionnaire and the company was therefore contacted to obtain the appropriate answer.

Similar to previous surveys, a complete range of the checks were run weekly on all the companies regardless of their size. This systematic validation approach was adopted to also identify disproportionately high or low expenditure.

Many companies failed on more than one criterion particularly if turnover was incorrect, as this has a knock-on effect in several of the other tests related to turnover.

The reason why quite a few companies failed checks 1, 2, 5, and 6 was that the capital expenditure in fact reflected a one off expenditure for a particular year. All questionnaires were checked for these failures and the companies were contacted to clarify specific responses.