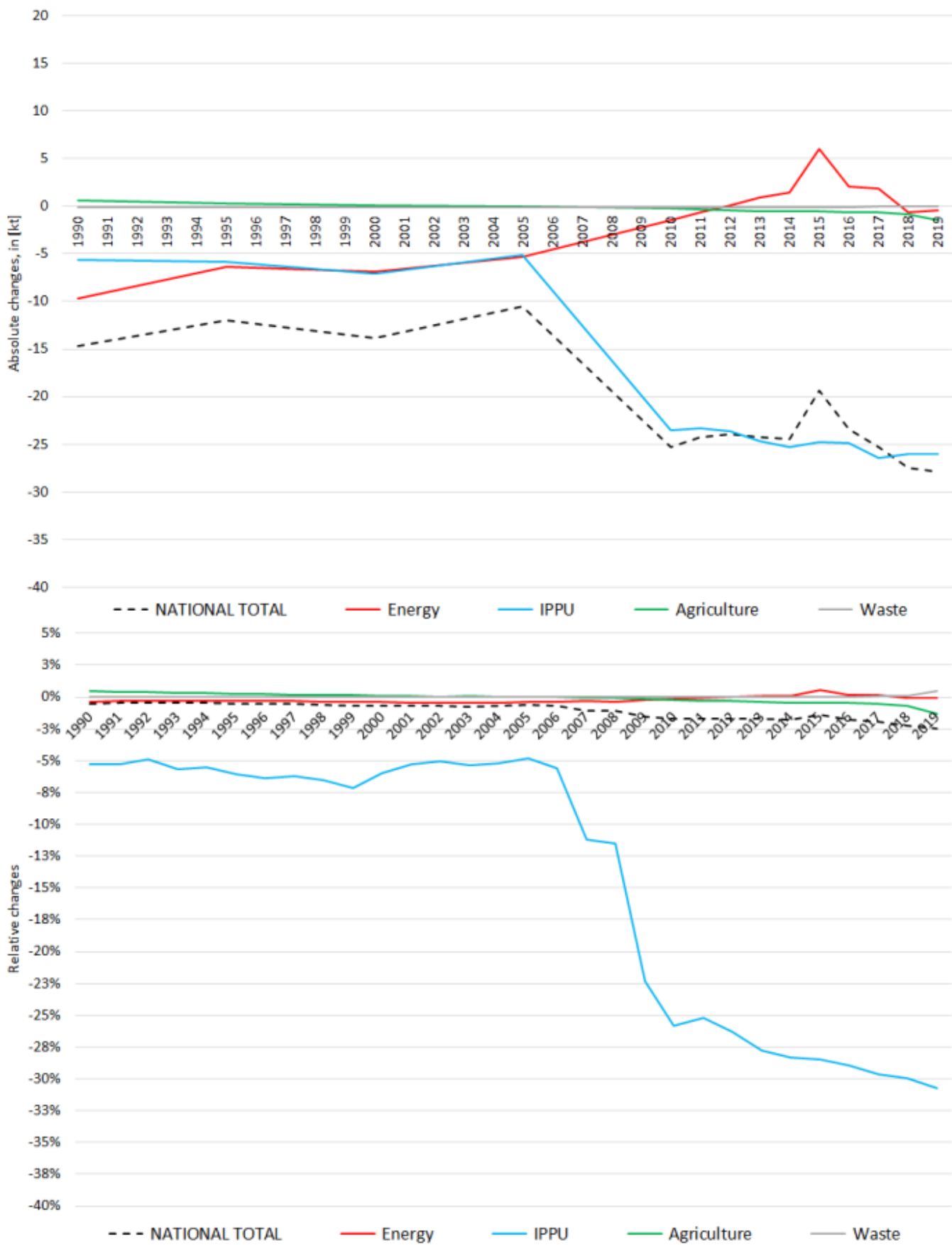


# Recalculations - Nitrogen Oxides

Revision of NO<sub>x</sub> emissions over time:



Changes within the **National Total reported for 1990 (-14.72 kt | -0.52 %)** are dominated by changes in NFRs **1.A.3.d ii** (-9.73 kt) and **2.B.2** (-5.68 kt) together with less significant revisions throughout NFRs 1, 2 and 3.

The most significant percental change occurs for **NFR 1.A.4.c iii with minus 52 %**.

Table 1: Changes of emission estimates 1990

| <table><thead><tr><th>Category</th><th>Value</th></tr></thead><tbody><tr><td>NATIONAL TOTAL</td><td>-33,47</td></tr><tr><td>Energy</td><td>-31,50</td></tr><tr><td>IPPU</td><td>0,311</td></tr><tr><td>Agriculture</td><td>-2,285</td></tr><tr><td>Waste</td><td>0,00</td></tr></tbody></table> |          |          |          |          | Category                                            | Value | NATIONAL TOTAL | -33,47 | Energy | -31,50 | IPPU | 0,311 | Agriculture | -2,285 | Waste | 0,00 | Submission<br>2021 | Submission<br>2022 | Difference | Reasoning |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|-----------------------------------------------------|-------|----------------|--------|--------|--------|------|-------|-------------|--------|-------|------|--------------------|--------------------|------------|-----------|
| Category                                                                                                                                                                                                                                                                                        | Value    |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NATIONAL TOTAL                                                                                                                                                                                                                                                                                  | -33,47   |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| Energy                                                                                                                                                                                                                                                                                          | -31,50   |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| IPPU                                                                                                                                                                                                                                                                                            | 0,311    |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| Agriculture                                                                                                                                                                                                                                                                                     | -2,285   |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| Waste                                                                                                                                                                                                                                                                                           | 0,00     |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
|                                                                                                                                                                                                                                                                                                 |          |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR Code                                                                                                                                                                                                                                                                                        | [kt]     |          |          | relative | see description and reasoning in:                   |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NATIONAL TOTAL                                                                                                                                                                                                                                                                                  | 2.850,05 | 2.835,33 | -14,72   | -0,52%   | sub-category chapters                               |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR 1 - Energy                                                                                                                                                                                                                                                                                  | 2.601,88 | 2.592,15 | -9,73    | -0,37%   | sub-category chapters                               |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.3.a i(i)                                                                                                                                                                                                                                                                                    | 3,94     | 3,94     | 0,00     | -0,02%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.3.a ii(i)                                                                                                                                                                                                                                                                                   | 2,80     | 2,78     | -0,01    | -0,38%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.3.b iii                                                                                                                                                                                                                                                                                     | 506,00   | 505,99   | -0,01    | 0,00%    | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.3.c                                                                                                                                                                                                                                                                                         | 45,05    | 45,32    | 0,26     | 0,59%    | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.3.d ii                                                                                                                                                                                                                                                                                      | 60,65    | 51,47    | -9,18    | -15,13%  | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.4.b ii                                                                                                                                                                                                                                                                                      | 0,06     | 0,08     | 0,02     | 30,65%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.4.c iii                                                                                                                                                                                                                                                                                     | 0,81     | 0,39     | -0,42    | -51,95%  | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 1.A.5.b                                                                                                                                                                                                                                                                                         | 41,60    | 41,20    | -0,40    | -0,96%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR 2 - IPPU                                                                                                                                                                                                                                                                                    | 106,37   | 100,73   | -5,64    | -5,30%   | sub-category chapters                               |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 2.B.2                                                                                                                                                                                                                                                                                           | 16,98    | 11,30    | -5,68    | -33,44%  | <a href="#">2.B.2 - Nitric Acid Production</a>      |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 2.B.6                                                                                                                                                                                                                                                                                           | NE       | 0,04     | 0,04     |          | <a href="#">2.B.6 - Titanium Dioxide Production</a> |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR 3 - Agriculture                                                                                                                                                                                                                                                                             | 141,27   | 141,92   | 0,65     | 0,46%    | sub-category chapters                               |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.B.1.b                                                                                                                                                                                                                                                                                         | 0,6958   | 0,6896   | -0,01    | -0,89%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.B.3                                                                                                                                                                                                                                                                                           | 0,26     | 0,28     | 0,02     | 6,48%    | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.B.4.g i                                                                                                                                                                                                                                                                                       | 0,01443  | 0,01427  | 0,00     | -1,145%  | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.B.4.g iv                                                                                                                                                                                                                                                                                      | 0,00251  | 0,00248  | -0,00003 | -1,33%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.D.a.2.a                                                                                                                                                                                                                                                                                       | 43,46    | 44,14    | 0,68     | 1,58%    | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| 3.D.a.3                                                                                                                                                                                                                                                                                         | 8,44     | 8,40     | -0,04    | -0,49%   | <a href="#">here</a>                                |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR 5 - Waste                                                                                                                                                                                                                                                                                   | 0,53     | 0,53     | 0,00     | 0,00%    |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |
| NFR 6 - Other                                                                                                                                                                                                                                                                                   | NA       |          |          |          |                                                     |       |                |        |        |        |      |       |             |        |       |      |                    |                    |            |           |

The small changes within the **National Total reported for 2019 (+8.22 kt | +0.68 %)** are dominated by changes in **NFRs 1 and 3**. Here, the most significant relative change occurs for **NFR 2.G with minus 49 %**.

Table 2: Changes of emission estimates 2019

|                |                    |                    |            |          |                                   |
|----------------|--------------------|--------------------|------------|----------|-----------------------------------|
|                | Submission<br>2021 | Submission<br>2022 | Difference |          | Reasoning                         |
| NFR Sector     | [kt]               |                    |            | relative | see description and reasoning in: |
| NATIONAL TOTAL | 1.136,79           | 1.108,82           | -27,97     | -2,46%   | sub-category chapters             |
| NFR 1 - Energy | 938,97             | 938,49             | -0,48      | -0,05%   | sub-category chapters             |
| 1.A.1.a        | 208,92             | 208,57             | -0,34      | -0,16%   | <a href="#">here</a>              |
| 1.A.1.b        | 16,66              | 16,66              | 0,01       | 0,05%    | <a href="#">here</a>              |
| 1.A.1.c        | 12,01              | 13,38              | 1,37       | 11,43%   | <a href="#">here</a>              |
| 1.A.2.a        | 3,95               | 4,15               | 0,21       | 5,25%    | <a href="#">here</a>              |
| 1.A.2.b        | 1,01               | 0,98               | -0,03      | -2,88%   | <a href="#">here</a>              |
| 1.A.2.e        | 0,21               | 0,21               | 0,00       | -0,67%   | <a href="#">here</a>              |
| 1.A.2.f        | IE                 | IE                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 1.A.2.g vii    | 14,81              | 14,74              | -0,07      | -0,47%   | <a href="#">here</a>              |
| 1.A.2.g viii   | 68,68              | 67,08              | -1,61      | -2,34%   | <a href="#">here</a>              |
| 1.A.3.a i(i)   | 11,77              | 11,93              | 0,16       | 1,37%    | <a href="#">here</a>              |
| 1.A.3.a ii(i)  | 2,61               | 2,65               | 0,03       | 1,28%    | <a href="#">here</a>              |
| 1.A.3.b i      | 275,95             | 271,75             | -4,20      | -1,52%   | <a href="#">here</a>              |
| 1.A.3.b ii     | 56,31              | 55,69              | -0,61      | -1,09%   | <a href="#">here</a>              |
| 1.A.3.b iii    | 106,05             | 106,65             | 0,60       | 0,56%    | <a href="#">here</a>              |
| 1.A.3.b iv     | 1,61               | 1,60               | -0,02      | -1,10%   | <a href="#">here</a>              |
| 1.A.3.c        | 7,33               | 7,99               | 0,66       | 8,94%    | <a href="#">here</a>              |
| 1.A.3.d ii     | 24,70              | 24,75              | 0,05       | 0,22%    | <a href="#">here</a>              |
| 1.A.4.a i      | 20,65              | 20,43              | -0,22      | -1,06%   | <a href="#">here</a>              |
| 1.A.4.a ii     | 7,96               | 7,92               | -0,04      | -0,55%   | <a href="#">here</a>              |
| 1.A.4.b i      | 56,94              | 60,05              | 3,11       | 5,47%    | <a href="#">here</a>              |
| 1.A.4.b ii     | 0,4913             | 0,5745             | 0,08       | 16,94%   | <a href="#">here</a>              |
| 1.A.4.c i      | 6,03               | 7,01               | 0,98       | 16,21%   | <a href="#">here</a>              |
| 1.A.4.c ii     | 26,87              | 26,87              | 0,00       | 0,00%    | <a href="#">here</a>              |
| 1.A.4.c iii    | 0,5584             | 0,3768             | -0,18      | -32,53%  | <a href="#">here</a>              |
| 1.A.5.a        | 0,22               | 0,23               | 0,01       | 4,92%    | <a href="#">here</a>              |
| 1.A.5.b        | 3,52               | 3,10               | -0,43      | -12,09%  | <a href="#">here</a>              |
| 1.B.2.a iv     | 0,7171             | 0,7172             | 0,0001     | 0%       |                                   |
| NFR 2 - IPPU   | 84,76              | 58,71              | -26,05     | -30,73%  | sub-category chapters             |
| 2.A.1          | 12,49              | 12,49              | 0,00       | 0,00%    | <a href="#">here</a>              |
| 2.A.2          | 3,843              | 3,843              | 0,000      | 0,00%    | <a href="#">here</a>              |
| 2.A.3          | 11,14              | 10,67              | -0,47      | -4,20%   | <a href="#">here</a>              |
| 2.A.5.a        | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.A.5.b        | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.A.5.c        | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.A.6          | 2,13               | 2,13               | 0,00       | 0,04%    | <a href="#">here</a>              |
| 2.B.1          | 2,95               | 2,95               | 0,00       | 0,00%    | <a href="#">here</a>              |
| 2.B.2          | 26,69              | 1,07               | -25,62     | -96,00%  | <a href="#">here</a>              |
| 2.B.3          | 0,13               | 0,13               | 0,00       | 0,00%    | <a href="#">here</a>              |
| 2.B.5          | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.B.6          | NE                 | 0,04               | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.B.7          | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.B.10.a       | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.B.10.b       | NA                 | NA                 | #WERT!     | #WERT!   | <a href="#">here</a>              |
| 2.C.1          | 21,12              | 21,12              | 0,00       | 0,00%    | <a href="#">here</a>              |

| <div>absolute changes in emissions reported for 2018</div> <table><thead><tr><th>Sector</th><th>Absolute change (kt)</th></tr></thead><tbody><tr><td>NATIONAL TOTAL</td><td>5,25</td></tr><tr><td>Energy</td><td>8,97</td></tr><tr><td>IPPU</td><td>0,54</td></tr><tr><td>Agriculture</td><td>-4,27</td></tr><tr><td>Waste</td><td>0</td></tr></tbody></table> | Sector               | Absolute change (kt) | NATIONAL TOTAL | 5,25     | Energy                            | 8,97 | IPPU | 0,54 | Agriculture | -4,27 | Waste | 0 | Submission 2021 | Submission 2022 | Difference |  | Reasoning |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------|----------|-----------------------------------|------|------|------|-------------|-------|-------|---|-----------------|-----------------|------------|--|-----------|
| Sector                                                                                                                                                                                                                                                                                                                                                         | Absolute change (kt) |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NATIONAL TOTAL                                                                                                                                                                                                                                                                                                                                                 | 5,25                 |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| Energy                                                                                                                                                                                                                                                                                                                                                         | 8,97                 |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| IPPU                                                                                                                                                                                                                                                                                                                                                           | 0,54                 |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| Agriculture                                                                                                                                                                                                                                                                                                                                                    | -4,27                |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| Waste                                                                                                                                                                                                                                                                                                                                                          | 0                    |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NFR Sector                                                                                                                                                                                                                                                                                                                                                     | [kt]                 |                      |                | relative | see description and reasoning in: |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NATIONAL TOTAL                                                                                                                                                                                                                                                                                                                                                 | 1.136,79             | 1.108,82             | -27,97         | -2,46%   | sub-category chapters             |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NFR 1 - Energy                                                                                                                                                                                                                                                                                                                                                 | 938,97               | 938,49               | -0,48          | -0,05%   | sub-category chapters             |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 2.C.2                                                                                                                                                                                                                                                                                                                                                          | NE                   | NE                   | #WERT!         | #WERT!   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 2.C.3                                                                                                                                                                                                                                                                                                                                                          | 0,51                 | 0,51                 | 0,53           | 104,34%  | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 2.C.4                                                                                                                                                                                                                                                                                                                                                          | NA                   | NA                   | #WERT!         | #WERT!   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 2.H.1                                                                                                                                                                                                                                                                                                                                                          | 2,95                 | 2,94                 | 0,00           | -0,11%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NFR 3 - Agriculture                                                                                                                                                                                                                                                                                                                                            | 112,24               | 110,79               | -1,44          | -1,29%   | sub-category chapters             |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.1.a                                                                                                                                                                                                                                                                                                                                                        | 0,489                | 0,507                | 0,017          | 3,52%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.1.b                                                                                                                                                                                                                                                                                                                                                        | 0,487                | 0,515                | 0,029          | 5,88%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.3                                                                                                                                                                                                                                                                                                                                                          | 0,3276               | 0,2616               | -0,0660        | -20,14%  | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.d                                                                                                                                                                                                                                                                                                                                                        | 0,00187              | 0,00191              | 0,00004        | 2,35%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.e                                                                                                                                                                                                                                                                                                                                                        | 0,0362               | 0,0386               | 0,0024         | 6,67%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.g i                                                                                                                                                                                                                                                                                                                                                      | 0,0180               | 0,0182               | 0,0003         | 1,46%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.g ii                                                                                                                                                                                                                                                                                                                                                     | 0,0179               | 0,0139               | -0,0039        | -21,88%  | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.g iii                                                                                                                                                                                                                                                                                                                                                    | 0,0108               | 0,0100               | -0,0007        | -6,78%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.B.4.g iv                                                                                                                                                                                                                                                                                                                                                     | 0,00202              | 0,00205              | 0,00002        | 1,06%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.D.a.1                                                                                                                                                                                                                                                                                                                                                        | 55,97                | 55,34                | -0,62          | -1,11%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.D.a.2.a                                                                                                                                                                                                                                                                                                                                                      | 37,54                | 37,05                | -0,49          | -1,30%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.D.a.2.b                                                                                                                                                                                                                                                                                                                                                      | 0,51                 | 0,56                 | 0,05           | 10,17%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.D.a.2.c                                                                                                                                                                                                                                                                                                                                                      | 11,55                | 11,56                | 0,01           | 0,08%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.D.a.3                                                                                                                                                                                                                                                                                                                                                        | 5,10                 | 4,73                 | -0,37          | -7,21%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 3.I                                                                                                                                                                                                                                                                                                                                                            | 0,172                | 0,169                | -0,003         | -1,86%   | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NFR 5 - Waste                                                                                                                                                                                                                                                                                                                                                  | 0,826                | 0,830                | 0,004          | 0,50%    | sub-category chapters             |      |      |      |             |       |       |   |                 |                 |            |  |           |
| 5.C.2                                                                                                                                                                                                                                                                                                                                                          | 0,283                | 0,288                | 0,004          | 1,44%    | <a href="#">here</a>              |      |      |      |             |       |       |   |                 |                 |            |  |           |
| NFR 6 - Other                                                                                                                                                                                                                                                                                                                                                  | NA                   |                      |                |          |                                   |      |      |      |             |       |       |   |                 |                 |            |  |           |