

# Comparison of energy data from the IEA energy statistics and the UNFCCC reference approach

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## Data sources:

Switzerland's greenhouse gas inventory 1990-2009, submitted on 15. April 2011, mainly CRF tables 1.A(b) and 1.A(d) .

Energy statistics of OECD countries (2011 Edition), IEA.

Comparison of energy data for 2009 provided by the UNFCCC secretariat to P. Filliger, Sept. 2011.

## Primary fuels, apparent consumption:

|           | CRF  |        |      | IEA  |        |        | IEA-CRF |     | Rel. Diff. |       |
|-----------|------|--------|------|------|--------|--------|---------|-----|------------|-------|
|           | Gg   | TJ     | NCV  | Gg   | TJ     | NCV    | Gg      | TJ  | Gg/Gg      | TJ/TJ |
| Crude oil | 4806 | 207640 | 43.2 | 4745 | 205103 | 43.225 |         |     |            |       |
| Additives | IE   | IE     |      | 60   | 2480   | 41.328 |         |     |            |       |
| Total     | 4806 | 207640 |      | 4805 | 207583 |        | -1      | -57 | 0.02%      | 0.03% |

Crude oil in CRF tables contains additives, while IEA lists them separately. The difference between CRF and IEA is negligible.

## Secondary fuels, apparent consumption:

### Gasoline

|              | CRF  |       |      | IEA  |       |        | IEA-CRF |      | Rel. Diff. |       |
|--------------|------|-------|------|------|-------|--------|---------|------|------------|-------|
|              | Gg   | TJ    | NCV  | Gg   | TJ    | NCV    | Gg      | TJ   | Gg/Gg      | TJ/TJ |
| Gasoline     | 1840 | 78181 | 42.5 | 1886 | 82984 | 44.000 |         |      |            |       |
| Gasoline LIE | 16   | 699   |      | IE   | IE    |        |         |      |            |       |
| Total        | 1856 | 78880 |      | 1886 | 82984 |        | 30      | 4104 | 1.6%       | 4.9%  |

The comparison is made for motor gasoline only. Aviation gasoline is included under aviation fuels. Gasoline reported by IEA includes gasoline used in Liechtenstein (LIE), which is subtracted for reporting under the UNFCCC. The IEA uses a different NCV, which causes a significant difference in the comparison in TJ. While the imports (in Gg) are identical if the amount for LIE is taken into account, small differences in the stock changes remain and result in the 1.6% difference shown above.

### Aviation fuels

|                 | CRF  |       |      | IEA  |       |      | IEA-CRF |    | Rel. Diff. |       |
|-----------------|------|-------|------|------|-------|------|---------|----|------------|-------|
|                 | Gg   | TJ    | NCV  | Gg   | TJ    | NCV  | Gg      | TJ | Gg/Gg      | TJ/TJ |
| Jet kerosene    | 1300 | 55886 | 43.0 | 1274 | 54610 | 42.9 |         |    |            |       |
| Aviat. gasoline |      |       |      | 3    | 132   | 44.0 |         |    |            |       |
| Other kerosene  |      |       |      | 2    | 86    | 43   |         |    |            |       |

|       |      |       |  |      |       |  |     |       |      |      |
|-------|------|-------|--|------|-------|--|-----|-------|------|------|
| Total | 1300 | 55886 |  | 1279 | 54828 |  | -21 | -1058 | 1.6% | 1.9% |
|-------|------|-------|--|------|-------|--|-----|-------|------|------|

Aviation fuels used for international aviation is included in the numbers above. There seems to be some differences in the aggregation of the different aviation fuels. In the CRF, all aviation fuels is reported under jet kerosene, while it is reported separately for the IEA statistics. The IEA numbers contain a small amount of aviation fuel that is used in Liechtenstein (of the order of 11.9TJ). As for gasoline, while the imports (in Gg) are identical, small differences in the reported stock changes result in the differences shown above.

### Diesel and gas oil

|                   | CRF  |        |       | IEA  |        |      | IEA-CRF |    | Rel. Diff. |       |
|-------------------|------|--------|-------|------|--------|------|---------|----|------------|-------|
|                   | Gg   | TJ     | NCV   | Gg   | TJ     | NCV  | Gg      | TJ | Gg/Gg      | TJ/TJ |
| Diesel            | 4081 | 174114 | 42.67 | 4395 | 187227 | 42.6 |         |    |            |       |
| Diesel LIE        | 31   | 1338   |       | IE   | IE     |      |         |    |            |       |
| Statistical diff. |      |        |       | -276 | -11758 |      |         |    |            |       |
| Total             | 4112 | 175452 |       | 4119 | 175469 |      | 7       | 17 | 0.2%       | 0.01% |

Diesel and gas oil used for international navigation is included in the numbers above. The IEA numbers include diesel and gas oil used in Liechtenstein. If this is taken into account, imports reported are identical for both IEA and UNFCCC. Stock changes are substantially different, however in the "Energy statistics of OECD countries", the IEA lists a very high statistical difference for diesel/gas oil. If this is included in the stock change of the IEA, the apparent consumption reported for IEA is identical to the one reported for UNFCCC.

### Residual fuel oil

Data agree between IEA and UNFCCC.

### Petroleum coke, LPG, refinery feedstocks

There are considerable differences in the reported numbers for petroleum coke, LPG and refinery feedstocks that need further investigation. However, they are all minor contributors to the total energy consumption.

### Bitumen, lubricants, white spirit, paraffin waxes, other oil products

Currently, these are reported as feedstocks in CRF table 1.A(d). However, they are not listed in table 1.A(b). The reporting of feedstocks needs to be reviewed for future submissions.