

ENERGY REPORT

For the year ending

31st of December

2014

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Energy Report for the year ending 31st of December 2014



This report is a short summary of the energy consumption/production of the DkIT campus. It is meant to provide an overview for management purposes.

Infrastructure:

The recently acquired DkIT Sport facility has added to our utility connections. We now have five electrical metering points and nine gas metering points connecting us to the National Grids. The energy providers are appointed by the National Procurement Service (NPS).

Electricity for the main campus is also produced on site, by means of an 850kW Vestas wind turbine. The wind turbine supplements the imported energy, and on occasions produces more than needed, which results in electricity being exported to the national grid, for which we receive payment. All other connections are supplied 100% by the National Grid.

It should be noted that the DkIT Building, although included in this report, has had virtually no impact on this year's energy usage figures due to it not being in use. The connection however incurred standing charges which are reflected in the higher cost.

Summary:

- The total Energy consumption of the whole campus was **9,188 MWh, down 8.5%**. Made up of: 4,844 MWh of Gas 4,344 MWh of Electricity.
- The total cost for Energy was **792 kEuro, up 22%** 292 kEuro
for Gas 437 kEuro for Electricity.
- Of the total electrical consumption of the campus 72% (3,062 MWh) were imported and 28% (1,180 MWh) produced in house by the Wind Turbine.
- The Wind Turbine Produced 1,495 MWh of which 1,180 MWh was consumed in house and 315 MWh exported.
- The average price per kWh was 14.28 cent for Electricity and 6.04 cent for Gas.
- The total output of CO₂ was 2,255 tonnes.

Note: **All the above figures exclude VAT chargeable at 13.5%**

Benchmark Figures:

The Student Population for 2013/14 was 4761 full time equivalent students

The useful floor area on which this calculation is based is 53,238 square metres (DkIT sport is not included).

With these figures we can get the following benchmark figures that can be compared on a year to year basis.

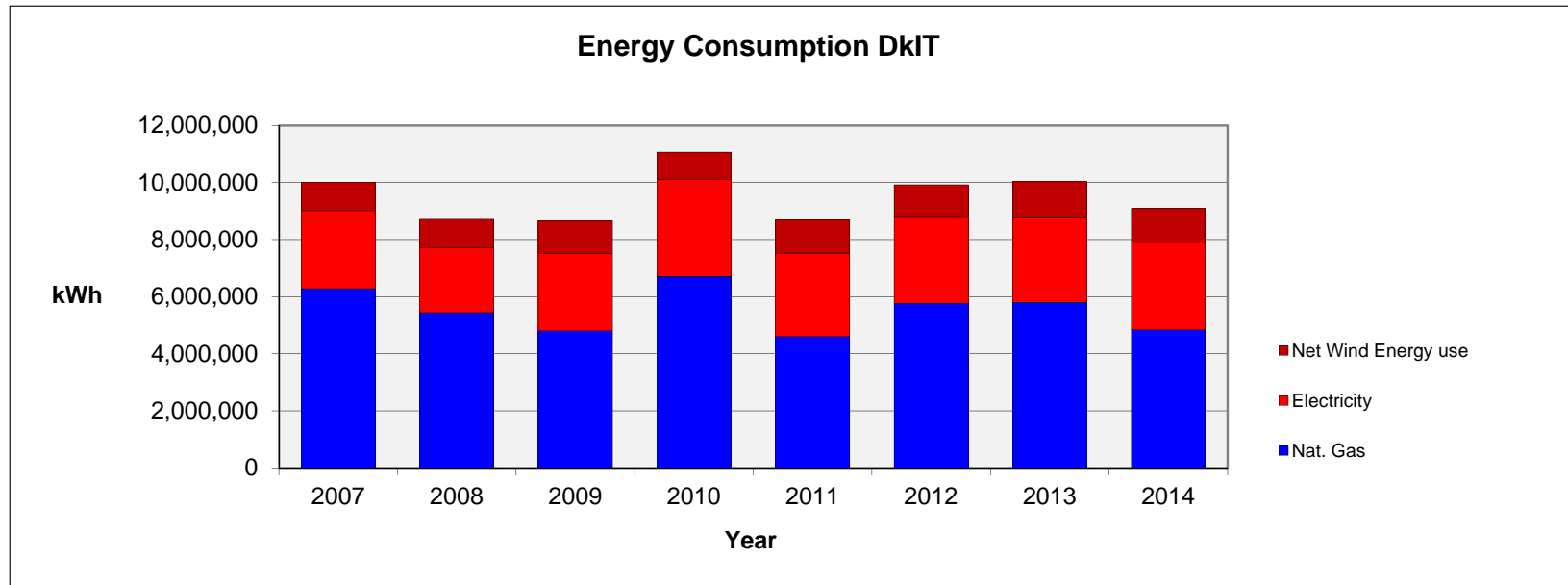
| | |
|---|----------|
| Energy Consumption per student (based on FTe students): | 1908 kWh |
|---|----------|

| | |
|--------------------------------------|---------|
| Energy Consumption per square metre: | 171 kWh |
|--------------------------------------|---------|

A more detailed comparison year on year is attached in the following pages.

Energy Consumption DkIT

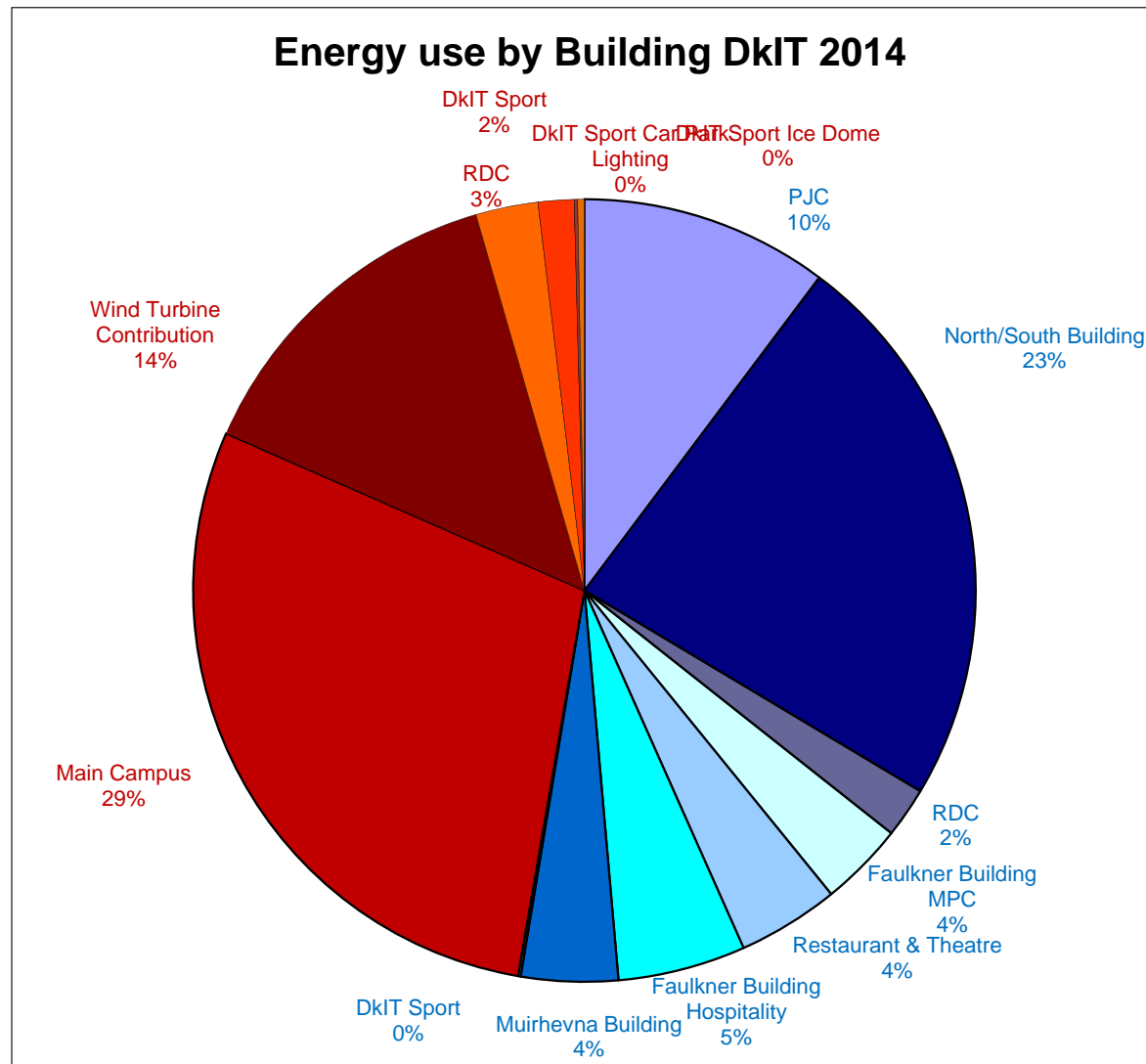
| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| Nat. Gas | 6,284,660 | 5,442,081 | 4,803,297 | 6,706,913 | 4,604,204 | 5,772,063 | 5,801,967 | 4,843,849 | kWh |
| Electricity | 2,731,937 | 2,270,675 | 2,702,368 | 3,403,401 | 2,927,124 | 3,007,121 | 2,960,470 | 3,061,876 | kWh |
| Net Wind Energy use | 1,000,000 | 1,000,000 | 1,156,116 | 957,568 | 1,148,923 | 1,141,460 | 1,281,910 | 1,179,901 | kWh |
| Wind Energy production | estimated | estimated | 1,497,671 | 1,117,718 | 1,510,316 | 1,440,406 | 1,608,429 | 1,495,390 | kWh |
| Wind Energy Export | | | 341,555 | 160,150 | 361,393 | 298,946 | 326,519 | 315,489 | kWh |



Breakdown of Energy used in 2014

| Building | kWh |
|-------------------------------|------------------|
| PJC | 941,844 |
| North/South Building | 2,143,127 |
| RDC | 190,409 |
| Faulkner Building MPC | 320,498 |
| Restaurant and Theatre | 385,556 |
| Faulkner Building Hospitality | 485,003 |
| Muirhevna Building | 367,086 |
| DkIT Sport | 10,326 |
| Main Campus | 2,650,582 |
| Wind Turbine Contribution | 1,281,910 |
| RDC | 236,450 |
| DkIT Sport | 136,544 |
| DkIT Sport Ice Dome | 12,600 |
| DkIT Sport Car Park Lighting | 25,700 |
| TOTAL | 9,187,635 |

| | | |
|------------|-----------|-----|
| Electrical | 4,343,786 | 47% |
| Thermal | 4,843,849 | 53% |

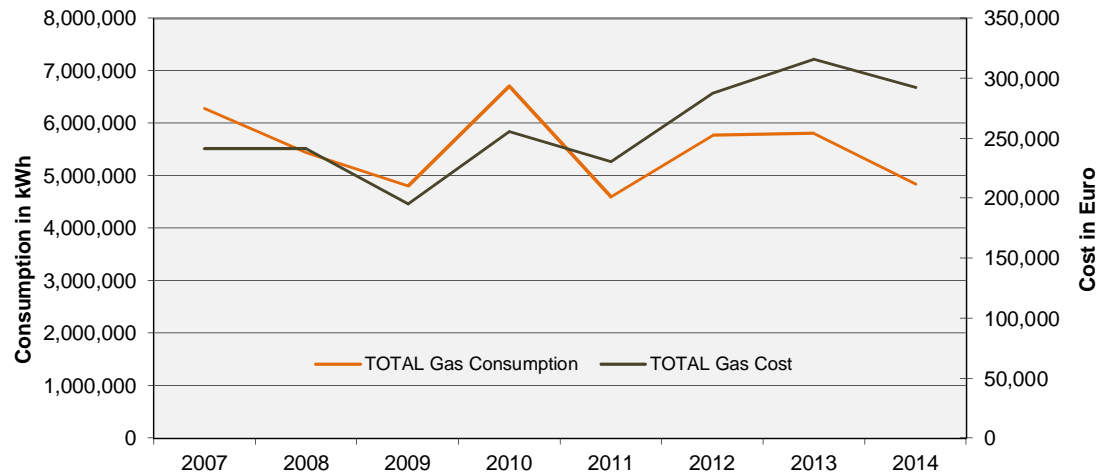


Imported Gas

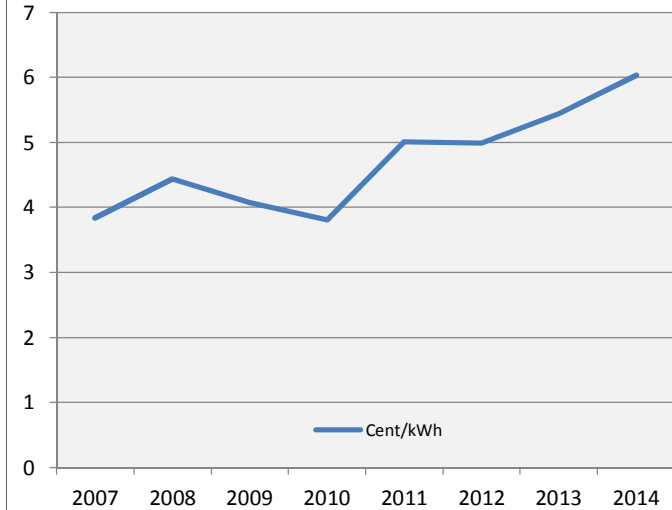
| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| TOTAL Gas Cost | 241,171 | 241,486 | 195,553 | 255,694 | 230,653 | 287,825 | 315,985 | 292,341 | Euro |
| TOTAL Gas Consumption | 6,284,660 | 5,442,081 | 4,803,297 | 6,706,913 | 4,604,204 | 5,772,063 | 5,801,967 | 4,843,849 | kWh |
| Average Cost per kWh | 3.8375 | 4.4374 | 4.0712 | 3.8124 | 5.0096 | 4.9865 | 5.4462 | 6.0353 | c/kWh |

DkIT Sport & Ice Dome
included

Imported Gas from Utilities



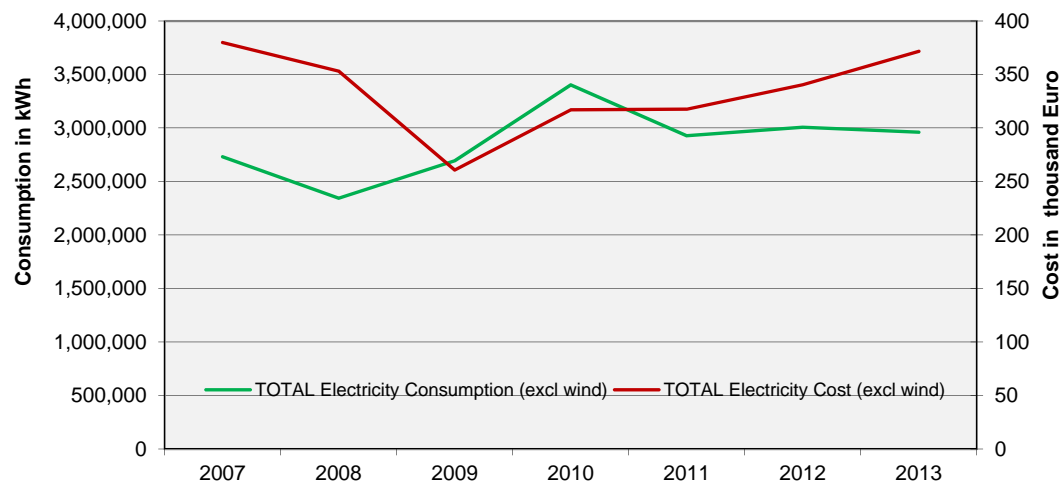
Average Gas Price



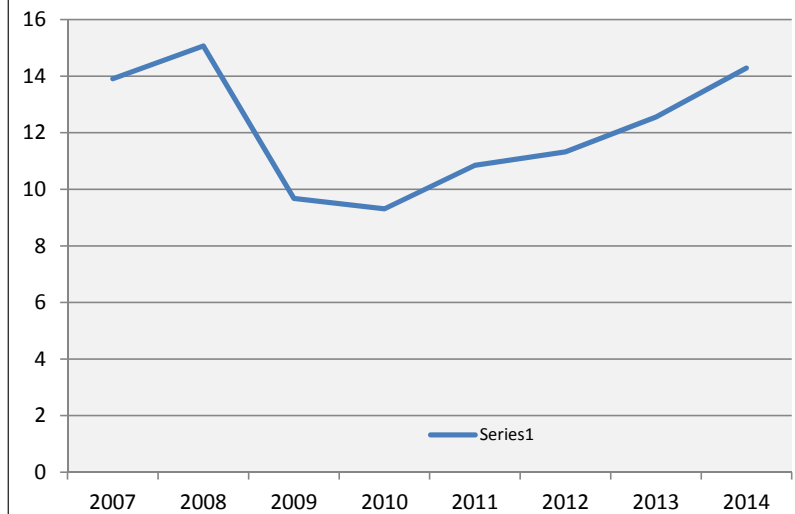
Imported Electricity

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| TOTAL Electricity Cost (excl wind) | 379,975 | 353,205 | 260,692 | 316,925 | 317,512 | 340,440 | 371,678 | 437,361 | Euro |
| TOTAL Electricity Consumption (excl wind) | 2,731,937 | 2,343,875 | 2,694,617 | 3,403,401 | 2,927,124 | 3,007,121 | 2,960,470 | 3,061,876 | kWh |
| Average cost per kWh | 13.909 | 15.069 | 9.675 | 9.312 | 10.847 | 11.321 | 12.555 | 14.284 | kWh |

Imported Electricity from Utilities DkIT



Average Electricity Price per kWh

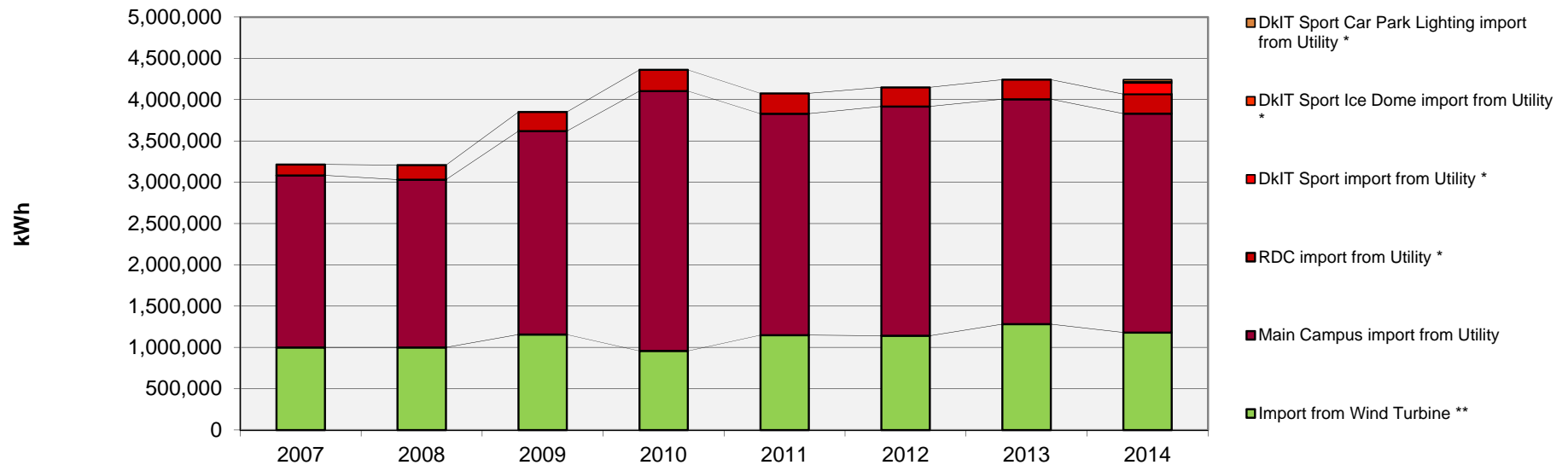


Makeup of consumed electrical energy DkIT

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| DkIT Sport import from Utility * | | | | | | | | 136,544 | kWh |
| DkIT Sport Ice Dome import from Utility * | | | | | | | | 12,600 | kWh |
| DkIT Sport Car Park Lighting import from Utility * | | | | | | | | 25,700 | kWh |
| RDC import from Utility * | 132,344 | 175,950 | 230,750 | 257,150 | 246,600 | 230,998 | 237,853 | 236,450 | kWh |
| Main Campus import from Utility | 2,082,320 | 2,031,643 | 2,463,867 | 3,146,251 | 2,680,524 | 2,776,123 | 2,722,617 | 2,650,582 | kWh |
| Import from Wind Turbine ** | 1,000,000 | 1,000,000 | 1,156,116 | 957,568 | 1,148,923 | 1,141,460 | 1,281,910 | 1,179,901 | kWh |
| TOTAL Consumption | 3,214,664 | 3,207,593 | 3,850,733 | 4,360,969 | 4,076,047 | 4,148,581 | 4,242,380 | 4,241,777 | kWh |

| | | | | | | | | | |
|---------------------------|----|----|----|----|----|----|----|----|---|
| Percentage of Wind Energy | 32 | 33 | 32 | 23 | 30 | 29 | 32 | 28 | % |
|---------------------------|----|----|----|----|----|----|----|----|---|

Makeup of consumed Electricity DkIT



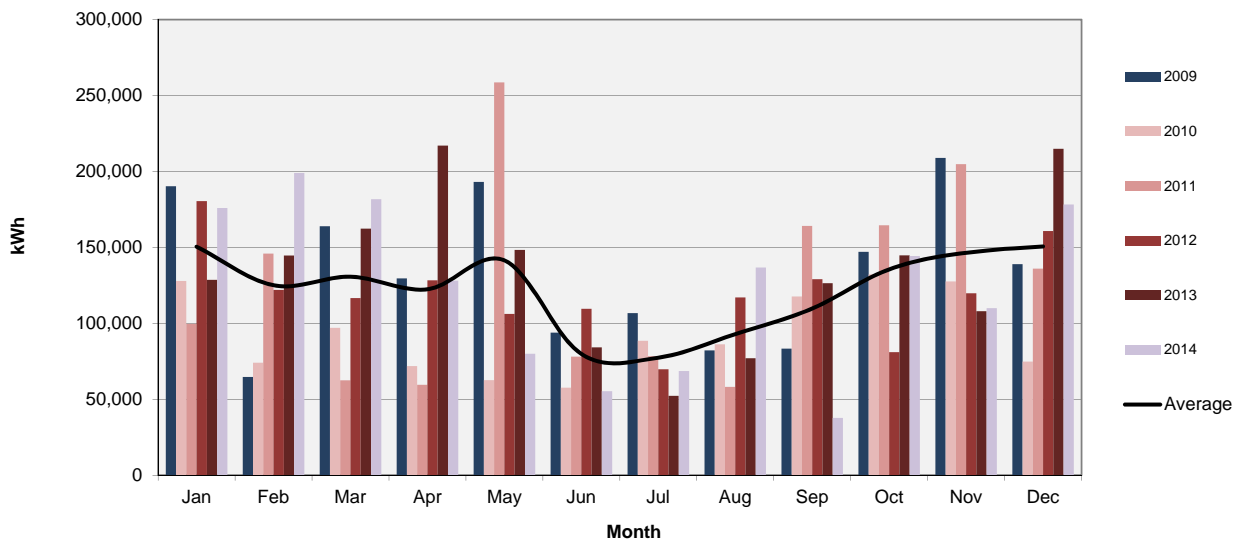
Wind Turbine Data

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------------|-----------|-----------|-----------|-----------|-----------|----------------|
| Production | 1,497,671 | 1,117,718 | 1,510,316 | 1,440,406 | 1,608,429 | 1,495,390 kWh |
| Export | 341,555 | 160,150 | 361,393 | 298,946 | 326,519 | 315,489 kWh |
| Consumption by DkIT | 1,156,116 | 957,568 | 1,148,923 | 1,141,460 | 1,281,910 | 1,179,901 kWh |
| Maintenance Cost | 20,798.24 | 14,235.93 | 22,417.01 | 24,069.27 | 17,313.00 | 18,674.00 Euro |
| Export Refund | 5,926.83 | 6,401.17 | 17,723.08 | 14,964.13 | 21,939.54 | 17,692.00 Euro |
| Cost for Wind Energy | 14,871.41 | 7,834.76 | 4,693.93 | 9,105.14 | -4,626.54 | 982.00 Euro |
| Cost per unit produced | 0.993 | 0.701 | 0.311 | 0.632 | -0.288 | 0.066 c/kWh |

Generation

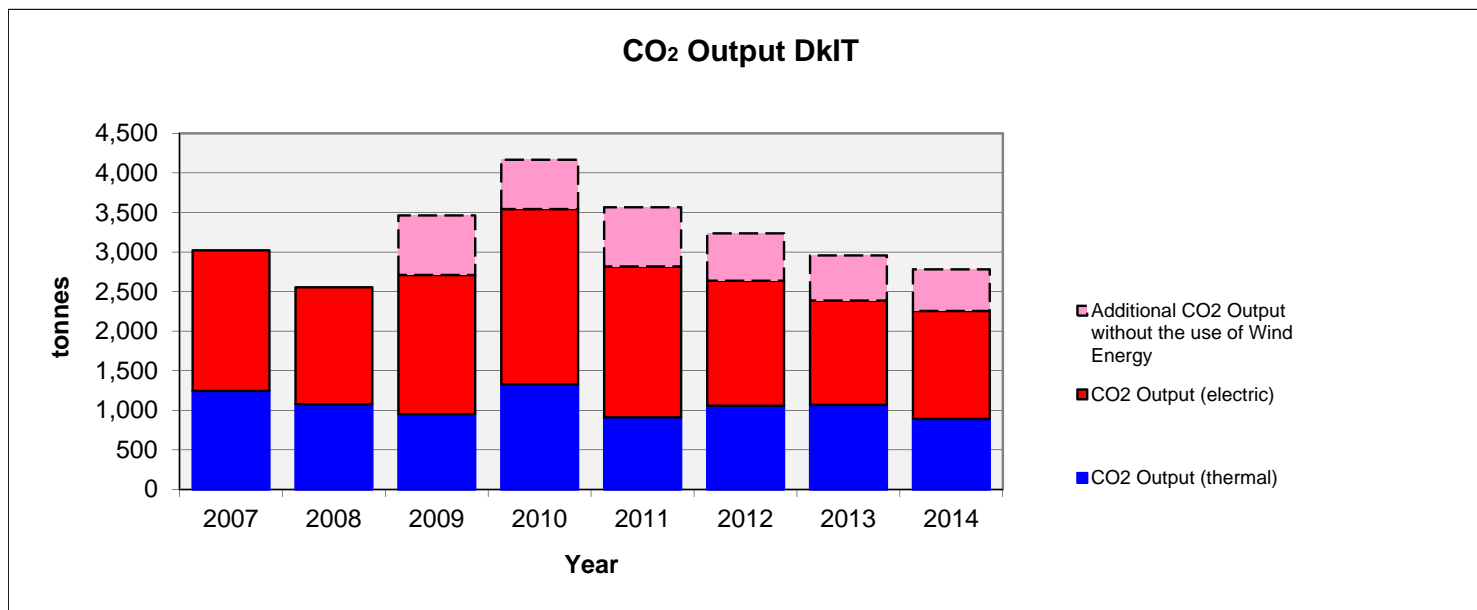
| Month | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|--------------------------|------------------|------------------|------------------|------------------|------------------|----------------------|
| Jan | 190,230 | 127,848 | 99,616 | 180,442 | 128,673 | 175,894 kWh |
| Feb | 64,685 | 74,059 | 145,901 | 121,982 | 144,687 | 198,993 kWh |
| Mar | 163,882 | 97,017 | 62,436 | 116,658 | 162,326 | 181,777 kWh |
| Apr | 129,586 | 71,817 | 59,484 | 128,282 | 217,050 | 128,087 kWh |
| May | 193,117 | 62,509 | 258,650 | 106,182 | 148,309 | 79,902 kWh |
| Jun | 93,820 | 57,599 | 78,064 | 109,582 | 84,107 | 55,263 kWh |
| Jul | 106,676 | 88,525 | 78,402 | 69,712 | 52,248 | 68,554 kWh |
| Aug | 82,109 | 86,147 | 58,165 | 117,037 | 77,027 | 136,771 kWh |
| Sep | 83,341 | 117,637 | 164,145 | 129,020 | 126,411 | 37,647 kWh |
| Oct | 147,050 | 132,240 | 164,569 | 80,964 | 144,729 | 144,358 kWh |
| Nov | 208,901 | 127,580 | 204,846 | 119,735 | 107,920 | 109,931 kWh |
| Dec | 138,930 | 74,740 | 136,038 | 160,810 | 214,942 | 178,213 kWh |
| Total | 1,602,327 | 1,117,718 | 1,510,316 | 1,440,406 | 1,608,429 | 1,495,390 kWh |
| <i>average per month</i> | <i>133,527</i> | <i>93,143</i> | <i>125,860</i> | <i>120,034</i> | <i>134,036</i> | <i>124,616 kWh</i> |

Wind Energy Production



CO₂ Output DkIT

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| CO ₂ Output (electric) | 1,778 | 1,478 | 1,759 | 2,216 | 1,906 | 1,578 | 1,319 | 1,364 | tonnes |
| CO ₂ Output (thermal) | 1,244 | 1,078 | 951 | 1,328 | 912 | 1,060 | 1,068 | 891 | tonnes |
| TOTAL | 3,023 | 2,556 | 2,710 | 3,544 | 2,817 | 2,637 | 2,387 | 2,255 | tonnes |
| Additional CO ₂ Output without the use of Wind Energy | | | 753 | 623 | 748 | 599 | 571 | 526 | tonnes |



Benchmark Energy Consumption DkIT

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-----------------------------|-------|-------|--------------|--------------|--------------|--------------|--------------|--------------|
| kWh per Student* | 2,505 | 1,917 | 1,702 | 2,246 | 1,658 | 1,869 | 1,667 | 1,661 |
| kWh per Student | | | 1,964 | 2,460 | 1,910 | 2,112 | 1,911 | 1,908 |
| kWh per square metre* | 199 | 170 | 150 | 202 | 150 | 164 | 164 | 149 |
| kWh per square metre | | | 173 | 221 | 174 | 186 | 189 | 171 |

* these figures do not take into account the energy produced by DkIT by the means of the Wind Turbine and only count Energy supplied by Utilities.

