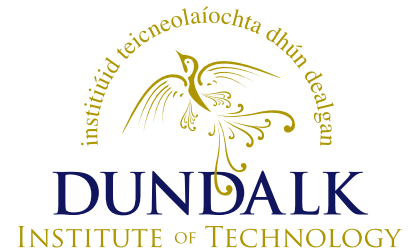


Energy Report for the year ending 31st of December 2011

Prepared by Estates Office DkIT



This report is a short summary of the energy consumption/production of the DkIT campus. It does not go into detail and is only meant to provide an overview for management purposes.

Infrastructure:

The current electrical installation consists of a single electricity connection to the National Grid. The metering and billing is managed by VAYU who are our current electricity provider. The electrical energy consumption is reduced by the production of electricity on site by the means of a Vestas 850kW wind turbine. The wind turbine supplements the imported energy and on occasions produces more than needed which results in electricity export for which we receive a small payment that is offset against the charges.

The Regional Development Centre has its own supply independent from the campus Network. This is managed by the ESB.

The provision of thermal energy is also managed by VAYU. There are seven meter points on site that connect to the Board Gais Network. Most of the Gas supplied is used for space heating purposes and small amounts for use in various laboratories and kitchens.

Summary:

The following figures are rounded to a degree that will help to remember the outline data.

The **total Energy consumption of the whole campus was 8,680 MWh.**

(4,604 MWh Gas and 4,076 MWh Electricity).

The Wind Turbine Produced 1,510 MWh of which 1,149 MWh was consumed in house and 361 MWh exported.

Of the total electrical consumption of the campus 70% (2,681 MWh) were imported and 30% (1,149 MWh) produced in House.

The **total cost for Energy was 457 kEuro**, 226 kEuro for Electricity and 231 kEuro for gas.

The average price per kWh was 9.93 cent for electricity and 5.01 cent for gas.

The total output of CO₂ was 2,817 tonnes.

Benchmark Figures:

The Student Population for 2011 was 4,544 full time students, plus apprentices and part time students.

The useful area on which this calculation is based is 50,000 square metres.

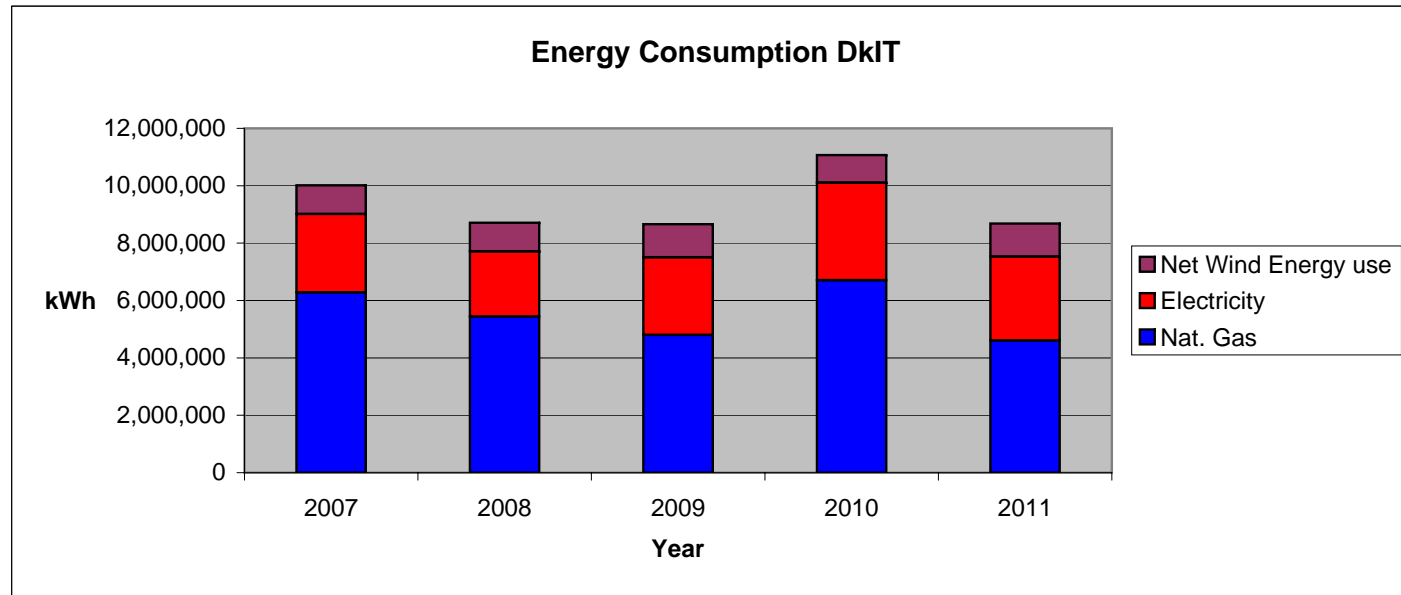
With these figures we can get the following benchmark figures that can be compared on a year to year basis.

Energy Consumption per student (based on FT students):	1,910 kWh
Energy Consumption per square metre:	174 kWh

A comparison year on year is attached in the following Pages.

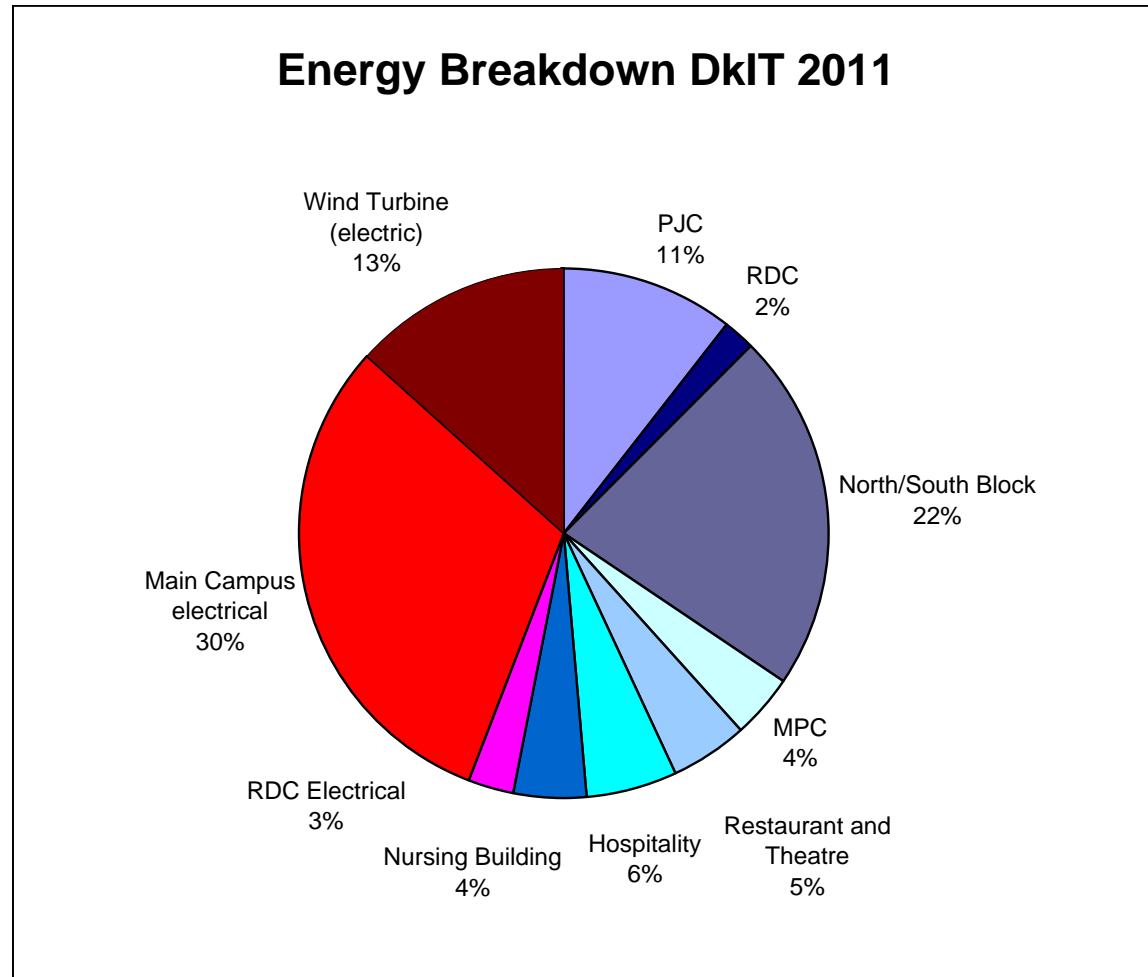
Energy Consumption DkIT

Year	2007	2008	2009	2010	2011	
Nat. Gas	6,284,660	5,442,081	4,803,297	6,706,913	4,604,204	kWh
Electricity	2,731,937	2,270,675	2,702,368	3,403,401	2,927,124	kWh
Net Wind Energy use	1,000,000	1,000,000	1,156,116	957,568	1,148,923	kWh
Wind Energy production	estimated	estimated	1,497,671	1,117,718	1,510,316	kWh
Wind Energy Export			341,555	160,150	361,393	kWh



2011

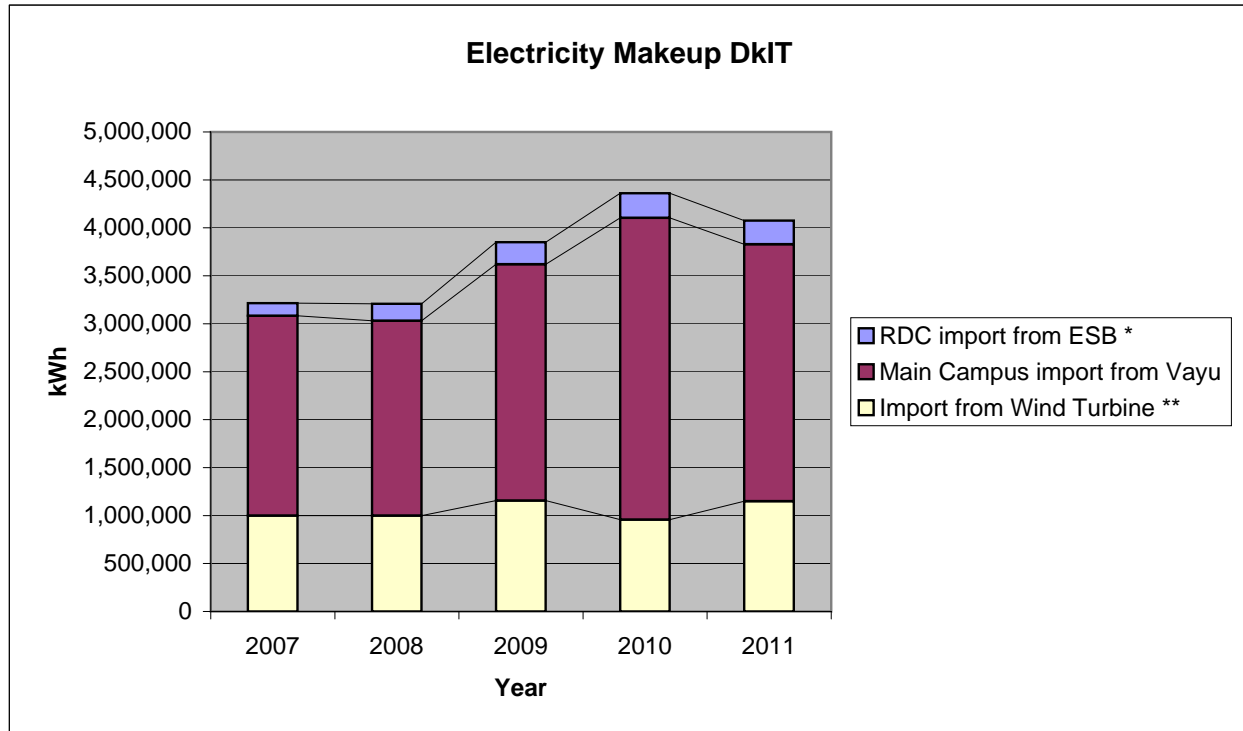
Building	kWh
PJC	918,628
RDC	159,374
North/South Block	1,901,210
MPC	343,350
Restaurant and Theatre	408,906
Hospitality	485,246
Nursing Building	387,490
RDC Electrical	246,600
Main Campus electrical	2,680,524
Wind Turbine (electric)	1,148,923
TOTAL	8,680,251
Electrical	4,076,047 47%
Thermal	4,604,204 53%



Makeup of consumed electrical energy DkIT

Year	2007	2008	2009	2010	2011	
RDC import from ESB *	132,344	175,950	230,750	257,150	246,600	kWh
Main Campus import from Vayu	2,082,320	2,031,643	2,463,867	3,146,251	2,680,524	kWh
Import from Wind Turbine **	1,000,000	1,000,000	1,156,116	957,568	1,148,923	kWh
TOTAL Imports	3,214,664	3,207,593	3,850,733	4,360,969	4,076,047	kWh

Percentage of Wind Energy	32	33	32	23	30	%
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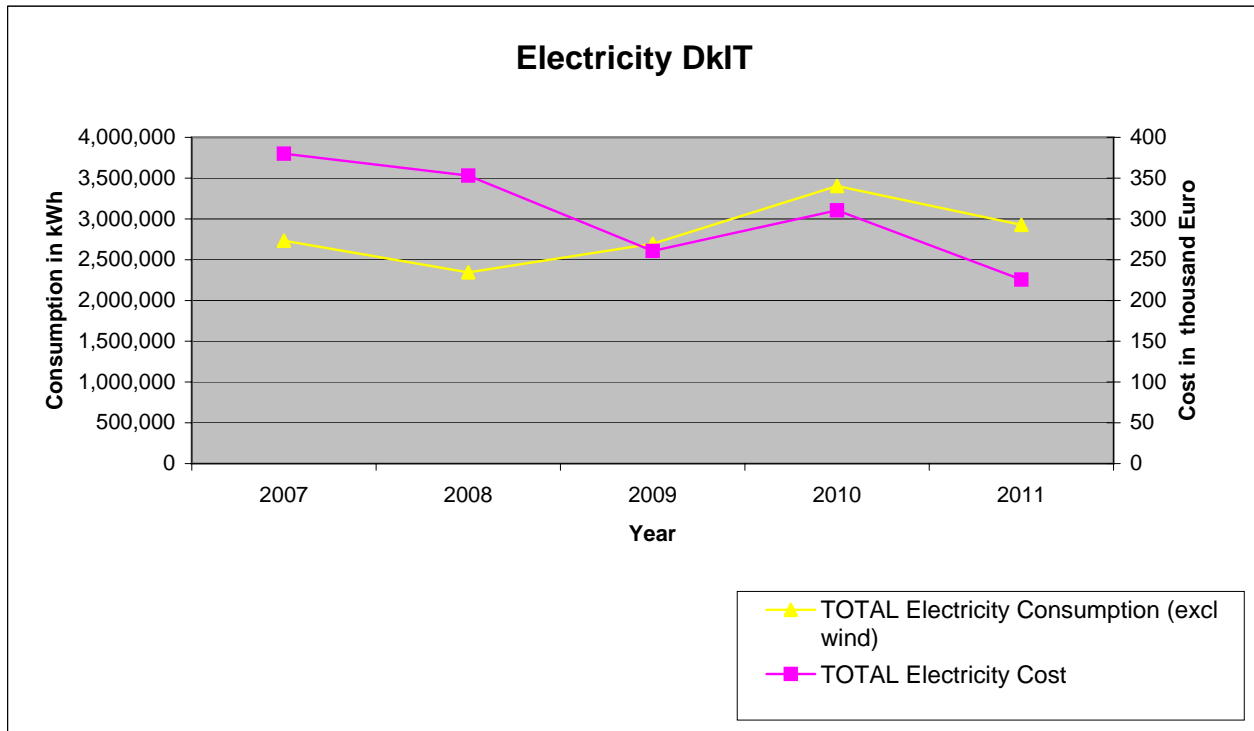
* RDC does not import from wind turbine

** data for 2007 & 2008 estimated

Imported Electricity

Main Building & RDC only!

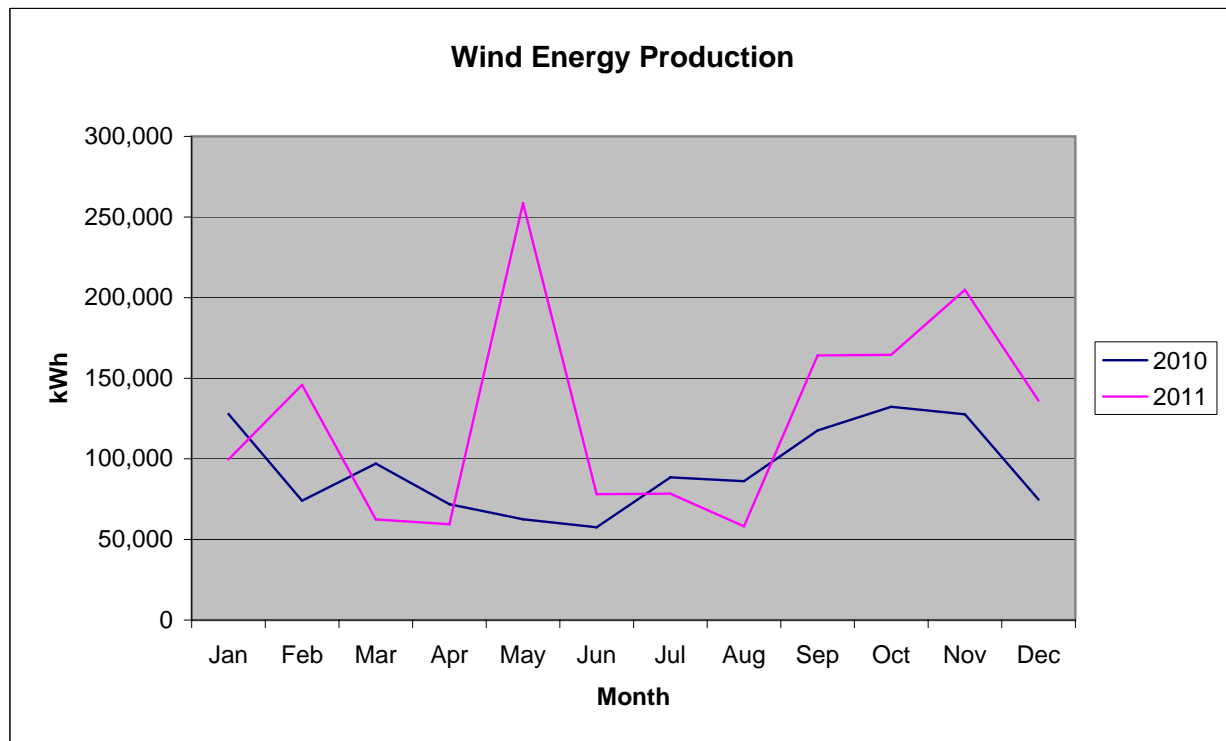
Year	2007	2008	2009	2010	2011	
TOTAL Electricity Cost	379,975	353,205	260,692	310,524	225,567	Euro
TOTAL Electricity Consumption (excl wind)	2,731,937	2,343,875	2,694,617	3,403,401	2,927,124	kWh
Average cost per kWh	13.909	15.069	9.675	9.124	7.706	kWh



Wind Turbine

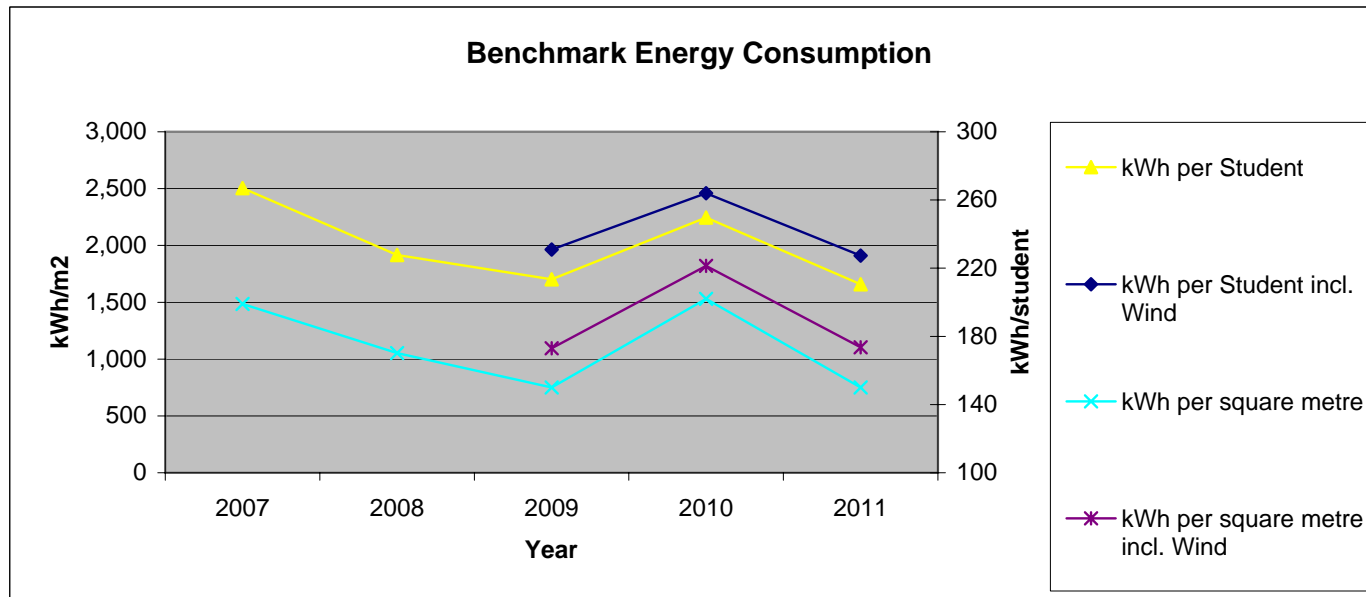
Year	2009	2010	2011
Production	1,497,671	1,117,718	1,510,316 kWh
Export	341,555	160,150	361,393 kWh
Consumption by DkIT	1,156,116	957,568	1,148,923 kWh
Maintenance Cost	20,798.24	14,235.93	22,417.01 Euro
Export Refund	5,926.83	6,401.17	17,723.08 Euro
Cost for Wind Energy	14,871.41	7,834.76	4,693.93 Euro
Cost per unit produced	0.993	0.701	0.311 c/kWh

kWh	2010	2011
Jan	127,848	99,616
Feb	74,059	145,901
Mar	97,017	62,436
Apr	71,817	59,484
May	62,509	258,650
Jun	57,599	78,064
Jul	88,525	78,402
Aug	86,147	58,165
Sep	117,637	164,145
Oct	132,240	164,569
Nov	127,580	204,846
Dec	74,740	136,038
Total	1,117,718	1,510,316



Benchmark Energy Consumption DkIT

Year	2007	2008	2009	2010	2011
kWh per Student	2,505	1,917	1,702	2,246	1,658
kWh per Student incl. Wind			1,964	2,460	1,910
kWh per square metre	199	170	150	202	150
kWh per square metre incl. Wind			173	221	174



CO₂ Output DkIT

Year	2007	2008	2009	2010	2011	
CO ₂ Output (electric)	1,778	1,478	1,759	2,216	1,906	tonnes
CO ₂ Output (thermal)	1,244	1,078	951	1,328	912	tonnes
TOTAL	3,023	2,556	2,710	3,544	2,817	tonnes
Additional CO ₂ Output without the use of Wind Energy			753	623	748	tonnes

