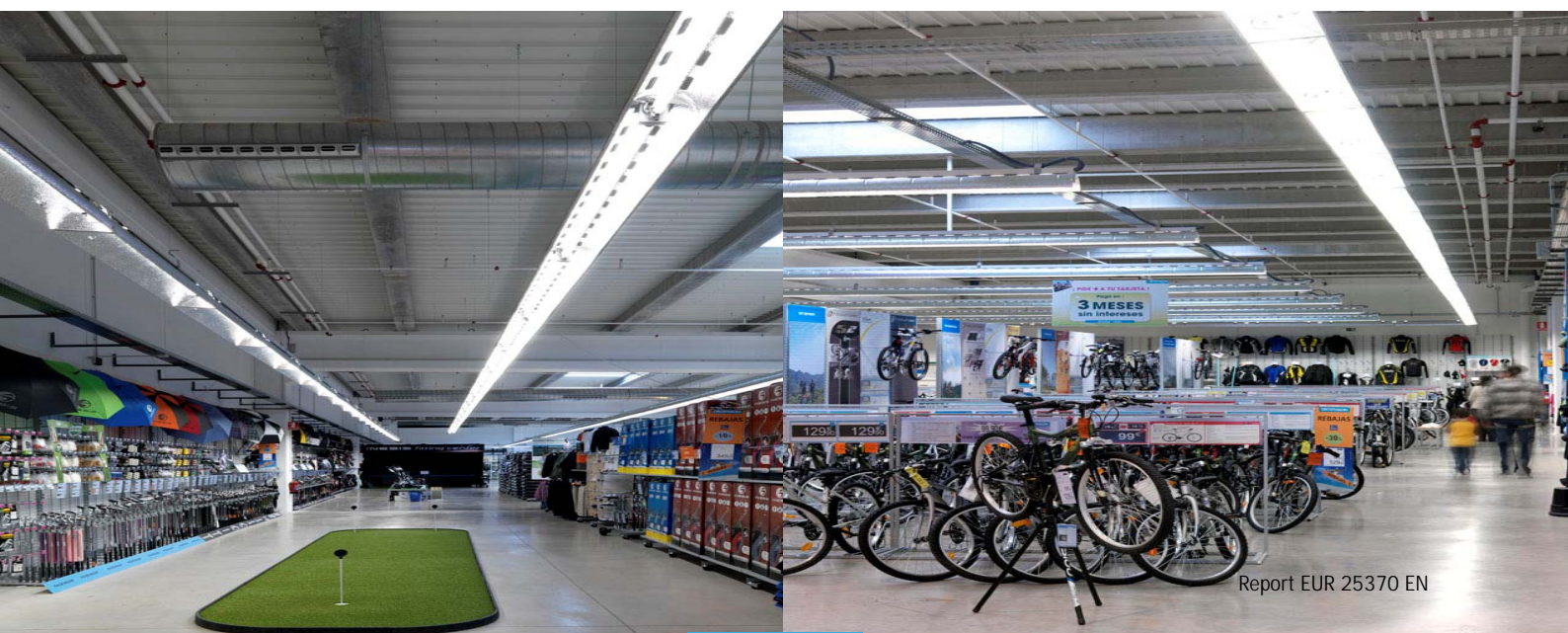


The 2010 European GreenLight Programme Evaluation

PAOLO BERTOLDI

MARION ELLE

2012



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Contact information

Paolo Bertoldi

Address: Joint Research Centre, Via Enrico Fermi 2749, TP 450, 21027 Ispra (VA), Italy

E-mail: paolo.bertoldi@ec.europa.eu

Tel.: +39 0332 78 9299

Fax: +39 0332 78 9992

www.jrc.ec.europa.eu

<http://re.jrc.ec.europa.eu/energyefficiency/>

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2. Executive Summary

The GreenLight Programme is a voluntary activation programme launched by the European Commission in 2000 to increase non-residential lighting energy efficiency. By the end of 2010, over 653 Partners from across the European Union, plus Norway and Switzerland, participated in GreenLight. This report assesses the achievements of the scheme in the year 2010. For 2010, 48 new Partners could be welcome into the programme.

The scope of the current analysis is to provide an insight into how the programme developed during the assessed period, both in terms of type and scope of new registrations, energy, cost savings and technologies involved. The comparison is based on the previous evaluation reports – the 2000-2008 Report, which represents an assessment of the programme over the period of eight years, and the 2009 Report, which contributed an update for the period of one year. Regular spreadsheet analysis was used for the evaluation. Four Partners within 2010 registered more than one distinct project, therefore the main basis for the analysis are the 66 projects, which were listed by the 48 Partners in 2010.

As has been already mentioned in the previous evaluation, a limitation on this analysis derives from the fact that often inadequate data is available. Out of the 66 projects that joined 2010 GreenLight Programme 6 did not send any report, for another 3 the report can be considered insufficient. In addition, there were inconsistencies and gaps in the data reported resulting in important technical or financial details missing. A complete overview of the data provided by the Partners can be found in Table 6.6.

In 2006 a special emphasis was started to enlarge the GreenLight programme to the new Member States of the European Union. As a result the network of Partners further expanded. However, in the year 2010, no new Partners from the New Member States were registered. In total, Partners within 2010 came from only 9 countries of the European Union and Croatia.

The 2000-2008 Report showed a total saving by the end of 2008 of 241 GWh/a. In 2009, an additional saving amounted to about 16 GWh/year. The savings reported by Partners joined until the end of 2010 amount to about a very respectable additional 40.7 GWh/a – representing the highest total of savings achieved by new partners within the scope of the programme since 2003 and the third largest annual savings as well fourth largest average savings reached per partner since the beginning of the programme. Only 30 % of the projects in 2010 were outdoor projects. More than half of the total of savings was achieved in indoor projects in the category of “Retail and Supermarkets”. In total, all 653 GreenLight Partners reach the savings of 297 GWh of electricity saved annually through efficient lighting at the end of 2010.

Savings were achieved primarily through converting to increased energy efficient lamps. Here the technology of light-emitting diodes (LED) has the highest share of almost 40 % of all reported changes and was both applied in indoor and outdoor projects. This development is specifically noteworthy since in the previous reporting period of 2009 not a single conversion to LED was reported. Unfortunately, for 36 % of the partners no specific data was available on any applied lamp changes. 40 % of the Partners enhanced also their lighting control systems.

In the year 2010 the positive development in terms of savings is especially convincing. However, the number of newly registered partners is not as positive as in the previous years. It might be due to expectable awareness decline inherent in long-term activation campaigns – GreenLight has now been running for more than a decade – which can only be overcome by addressing new target groups and refining the campaign instruments, all of which has budgetary and resource implications.

3. Introduction

In the year 2000, the European Commission launched the European GreenLight Programme to convince end-users to adopt energy efficient lighting technologies and systems, as well as to foster a gradual market conversion. GreenLight is promoting energy efficient lighting in non-residential premises and it is based on a voluntary participation. This Programme is managed by the Joint Research Centre of the European Commission.

Any European organisation - public or private, can join the programme as a GreenLight Partner or as a GreenLight Endorser. In the case in which energy savings can justify the relative investments, and that the lighting quality can be maintained or improved, Partner organisations commit themselves to upgrade their lighting systems in their existing facilities, and/or to install the best available energy efficient technologies in their new buildings, or outdoors. Endorser organisations are promoting the GreenLight Programme to potential new Partners which might be, either in their country of origin, or in any other country in the EU. Their role is to expand the network of Partners as well as to provide assistance to Partners in their application process. Most importantly, it is to promote the proper implementation of energy saving measures.

Joining the programme allows Partners to benefit from a wide public recognition for their efforts to improve the energy efficiency of their lighting systems in their organisation.

The principles for participating in the GreenLight Programme are detailed in the respective guidelines for Partners and Endorsers. Partners have to report to the Joint Research Centre on their savings whenever they implement saving measures. Endorsers have to submit a Promotion Plan as part of their application, detailing the specific actions that they intend to take to promote the programme to potential Partners. Endorsers are expected to submit a Promotion Plan each year.

Besides the Joint Research Centre, National Contact Points have been created in most of the member states, covering a transitional role in the Green Light Programme: they constitute the bridge between the Joint Research Centre and interested local organisations. The National Contact Points provide information and guide potential Partners and Endorsers through the application process. The active National Contact Points submit applications to the Joint Research Centre on a regular basis.

Up until now, the achievements and particularities of the technologies adapted within the GreenLight Programme have been evaluated in two reports – the 2000-2008 Evaluation Report as well as the 2009 Evaluation Report. In addition, motivations of the Partners have been assessed within a Survey Report based on questionnaires, which has been published for the years 2008 to 2009. Case Studies and Catalogues representing all GreenLight Partners are available on a regular annual basis.

The current Report is primarily focused on:

- The split of Partners by sector of activity
- The Partner's savings achieved (energy saved, costs saved, etc)
- The correlation between the investments and the savings
- The type of technologies applied.

4. Methods

This report is based on the information and documentation provided by the Partners that have applied to the GreenLight Programme and have reported on the results achieved through their own GreenLight project.

The period assessed is the calendar year 2010 and included all information reported by Partners newly registered within this period.

The assessment was carried out through the collection of information submitted by the Partners and its subsequent analysis through spreadsheets, tables and graphs. Energy savings are calculated in the database by subtracting the consumption in kWh/a after the project from the consumption before the project. Costs savings in Euro are calculated in the database comparing the running cost (Euro/Year) before and after the programme implementation. Attention is given to the relation between the investments and the savings achieved, this representing the key driver in convincing new Partners, and to that matter any organisation outside of the GreenLight Programme to invest into energy saving projects. The spreadsheet also includes other data, if available, such as the project's investment payback time, the area interested by the intervention (size in square meters and whether indoors or outdoors) and the type of lamps and luminaries installed. The analysis is also split into different categories. These categories are based on the business sector of the Partners and also on the type of project implemented.

Based on the analysis of the previous years, the following categories were identified:

- A: Airports
- C: City and Public Buildings
- CP: Car Parks
- E: Educational Buildings
- HP: Hospitals and Medical Centres
- HR: Hotel and Restaurants
- LT: Logistic and Transportation
- O: Others
- OS: Street Lighting
- P: Production Sites
- PT: Public Transportation
- R: Retail and Supermarkets
- S: Services and Offices
- SP: Sport Halls
- T: Telecommunications
- U: Unclear

Within the year 2010, no projects were submitted within the categories "Airports", "Car Parks", "Others", "Public Transportation" and "Telecommunications". All projects in the category "Street Lighting" logically were implemented outdoors and only one additional project was also implemented outdoors. All others were indoor projects. Four Partners applied multiple projects, which is to say that they reported on implementations at two to ten various sites (different in geographical location and in different buildings complexes). Thus the elaboration of the technical data and its analysis focused more on the reported 66 projects rather than on the number of 48 Partners.

6. Results

6.1 Evolution of the GreenLight Programme in 2010

By the end of 2010, 48 new Partners joined GreenLight bringing the total number of Partners to 653. The new entries for 2010 constitute the smallest number of new partners since 2003 and are a continuation of the trend of decreasing new entries since the peak of registrations in 2007. The programme of GL has been running for more than a decade and a certain saturation of interested partners has to be seen as a natural life-cycle common for voluntary awareness campaign activities. This trend could be overcome with additional promotional activities and additional budgets to reach new target groups. Figure 6.1 and table 6.1 show the number of new partners that joined the GreenLight Programme each year from 2000 to 2010 as well as the number of already existing Partners. The total value gives the number of Partners having committed to the programme by the end of the respective year. Any new Partner is taken into account in the year the application is approved and the official welcome letter from the Joint Research Centre has been issued.

Figure 6.1 GreenLight 2000 to 2010: Development of New Registrations

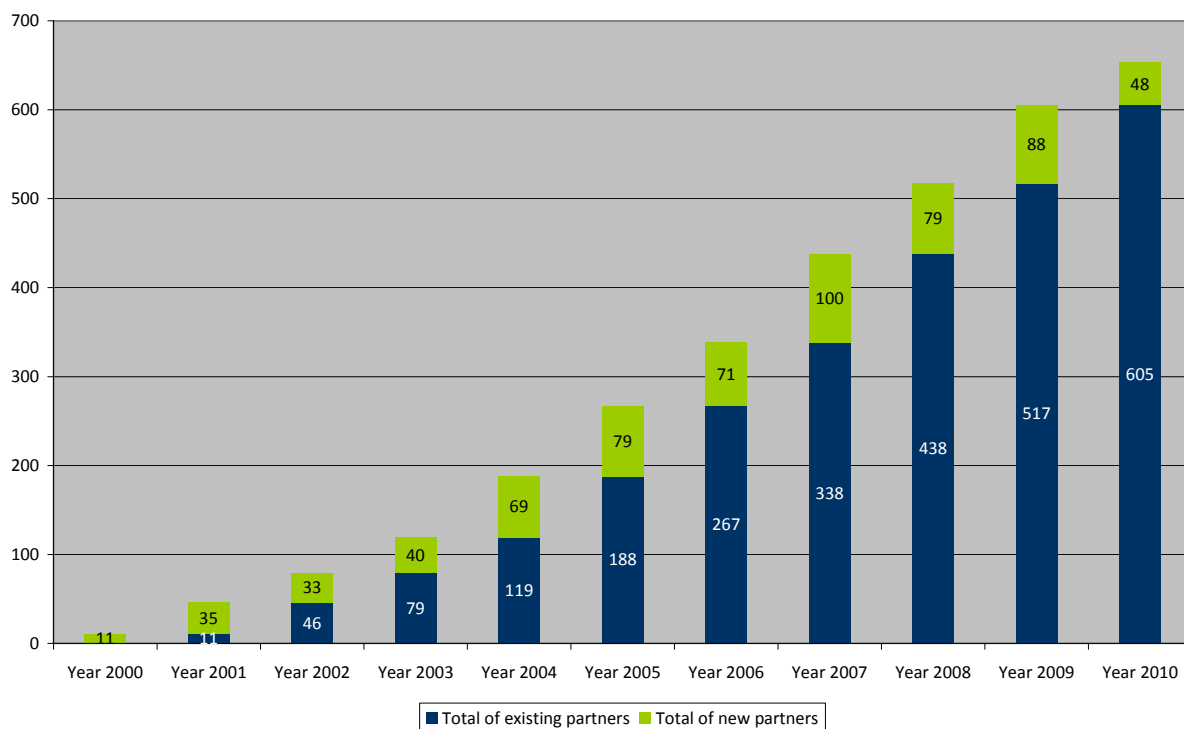


Table 6.1 GreenLight 2000 to 2010: Number of Partners Joining		
Year	Existing	New
2000	0	11
2001	11	35
2002	46	33
2003	79	40
2004	119	69
2005	188	79
2006	267	71
2007	338	100
2008	438	79
2009	517	88
2010	605	48
total	653	

6.2 Composition of Partners

The size of the Partners varies to a large degree. Some companies are large international groups with thousands of indoor and outdoor square meters. Others represent large cities whilst others are small towns with only a few kilometres of illuminated roads and/or a few public buildings. Others projects are in sport halls, offices, libraries or public building covering less than 1000 square meters.

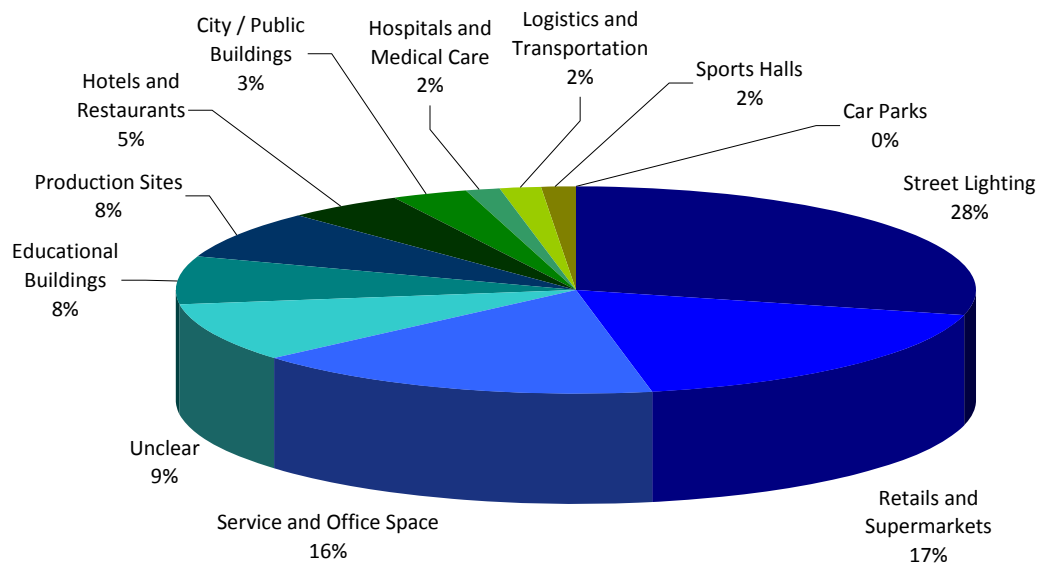
Various business fields were covered in 2010: commercial, educational, healthcare, hotel, industry, leisure/sport as well a regular street lights and public buildings. However, in comparison to the previous year, there were categories “Airports”, “Car Parks”, “Others”, “Public Transportation” and “Telecommunications”.

The 48 Partners from 2010 came from 9 countries of the European Union as well as Croatia and submitted a total of 66 projects. 4 Partners submitted multiple projects and implemented thus upgrading and improvements of lightings in more than one setting, such as building complex, business fraction or area. There were no projects submitted for the so called New Member States.

Country	N° of projects
France	13
Spain	13
The Netherlands	11
Germany	9
Croatia	6
Belgium	5
Luxembourg	4
Czech Republic	2
Portugal	2
Austria	1
total	66

Country	N° of projects in the area of			
	Indoor	Outdoor	Unclear	total
France	10		3	13
Spain	11		2	13
The Netherlands	5	4	2	11
Germany	1	8		9
Croatia		6		6
Belgium	5			5
Luxembourg	4			4
Czech Republic		2		2
Portugal	2			2
Austria	1			1
total	39	20	7	66

Figure 6.2 shows the share of the different categories of the GreenLight Programme projects implemented in 2010.

Figure 6.2 GreenLight 2010: Categories of Projects in Percentage

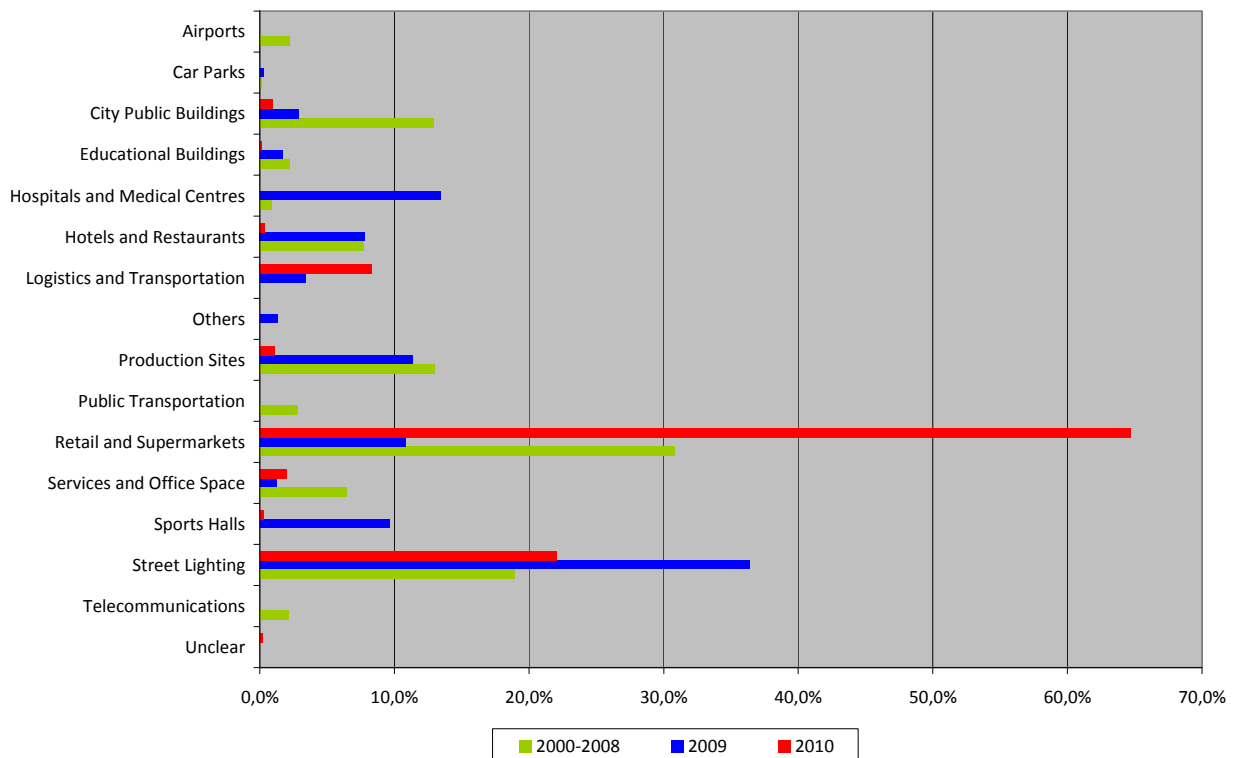
In 2010 the largest fraction of project came from the category “Street Lighting”, which was registered by Partners from public authorities and municipalities. A further large group was represented by classical indoor projects in “Retail and Supermarket” as well as “Service and Office Space”, which came mostly from Partners in the private sector (i.e. supermarket chains such as Delhaize or Unibail-Rodamco). Neither the largest category of 2009 – which was “Sports Halls” – nor the classical indoor public activity field “Public Buildings”, which was the largest category in the assessment of the scheme 2000-2008 according to number had much weight in 2010. However, again like in the Report 2000-2008 the category “Retail and Supermarkets” achieved the highest percentage of savings (see Table 6.5).

Table 6.4 GreenLight 2010: Number of Projects by Category	
Category	N° of projects
Street Lighting	19
Retails and Supermarkets	12
Service and Office Space	11
Unclear	6
Production Sites	5
Educational Buildings	5
Hotels and Restaurants	3
City / Public Buildings	2
Public Sports Halls	1
Traffic Lights	1
Hospitals and Medical Care	1
Car Parks	0
Logistics and Transportation	0
total	66

Table 6.5 GreenLight 2000 to 2010: Savings by Category in Percentage According to Reports			
* category with highest percentage within Report			
Category	2000-2008	2009	2010
Airports	2,2%	-	-
City Public Buildings	12,9%	2,9%	0,92%
Car Parks	0,1%	0,3%	-
Educational Buildings	2,2%	1,7%	0,10%
Hospitals and Medical Centres	0,9%	13,4%	0 %
Hotels and Restaurants	7,7%	7,8%	0,34 %
Logistics and Transportation	-	3,4%	8,33 %
Others	0,0%	1,3%	-
Street Lightings	18,9%	36,4%	22,05%
Production Sites	13,0%	11,3%	1,11%
Public Transportation	2,8%	-	-
Retails and Supermarkets	30,8%	10,8%	64,7%
Services and Office Space	6,4%	1,2%	2,01%
Sport Halls	-	9,6%	0,27%
Telecommunications	2,1%	-	-
total	100%	100%	100%

In 2010 the number of projects where a category could be identified was 60 out of 66 (90,77%).

Figure 6.3 GreenLight 2000 to 2010: Savings by Category in Percentage According to Reports



6.3. Quality of Reporting

The total number of projects registered in 2010 amounted to 66, whilst the total number of Partners joining in 2010 was 48. Four Partners listed multiple projects. The only information that was submitted for all the projects was the country. Information on the energy savings in kWh/a was more often submitted rather than information on the actual cost savings in Euro.

Unfortunately little information was provided as to the technologies used or the type of ballast and luminaries adopted. The results have also been submitted in many different ways, both through the application form supplied by the GreenLight Programme as well as in the form of a free submission of information on the projects.

The languages used to communicate where varied. Generally- as has been already stated in the evaluation report for 2009 – the non-homogeneous submission of data has been an obstacle for the proper comparison and evaluation of both the technical and economical information. Common and mandatory reporting should be again encouraged and enforced in this field, perhaps through a standardized log-in protected online submission tool, making also the on demand evaluation of digitally stored data easy. In Table 6.6 all percentage of sufficient data reported per project can be seen.

Table 6.6 GreenLight 2010: Type of Data submitted by the Partners		
Numbers of partners in the research		48
Numbers of projects in the research		66
Type of data	No of projects, who submitted this data	In percent of total
Country	66	100,00%
Category	66	100,00%
Overall report	62	93,55%
Indoor/Outdoor	59	88,71%
Effective Energy Savings kWh/a	59	88,71%
Project Name	52	79,03%
Savings in running costs €/a	50	75,81%
Lamps after 1	48	72,58%
Lamp changes	47	70,97%
Effective Energy Savings in %	46	69,35%
Consumption before kWh/a	44	66,13%
Consumption after kWh/a	44	66,13%
Lamps before 1	43	64,52%
Luminaire changes	33	50,00%
Payback in years	32	48,39%
Ballast type changes	31	46,77%
Investment costs €	28	41,94%
Lighting control upgrades	28	41,94%
Regulation	28	41,94%
Running cost in €/a after	24	37,10%
Running cost in €/a before	22	33,87%
Luminaire after	12	17,71%
Ballast after	9	12,90%
Luminaire before	6	9,68%
Ballast before	6	9,68%
Lamps after 2	5	8,06%

Lamps after 3	5	8,06%
Endorser	2	3,23%
Target Energy Savings kWh/a	2	3,23%
Target Energy Savings in %	2	3,23%
Lamps before 2	2	3,23%
Lamps before 3	2	3,23%

6.4 Energy Savings

In total, the 2010 GreenLight Partners achieved to save a 40.705.956,15 kWh/a or approximately 40,7 GWh per year. This is the third highest saving in total and the fourth highest average saving per partner since 2003 within the whole scope of the programme.

Table 6.7 GreenLight 2000 to 2010: Comparison Energy Saving Totals and Average per Partner			
Year	Total number of partners	Total savings in kWh/a	Average saving in kWh/a per partner
2000	11	8.839.674,00	803.606,73
2001	35	46.312.204,00	1.323.205,83
2002	33	31.506.482,00	954.741,88
2003	40	50.364.496,03	1.259.112,40
2004	69	13.484.372,00	195.425,68
2005	79	3.142.521,59	39.778,75
2006	71	29.461.975,90	414.957,41
2007	100	36.892.976,91	368.929,77
2008	79	21.027.109,42	266.165,94
2009	88	15.323.958,82	174.135,90
2010	48	40.705.956,15	848.040,75
total	653	297.061.726,82	454.918,42

The highest amount of energy with 64,70% was saved in the single category of “Retail and Supermarkets”. The second largest amount of 22,05% of the total was saved in the “Street Lighting” category.

Figure 6.4 GreenLight 2010: Total Energy Savings by Category

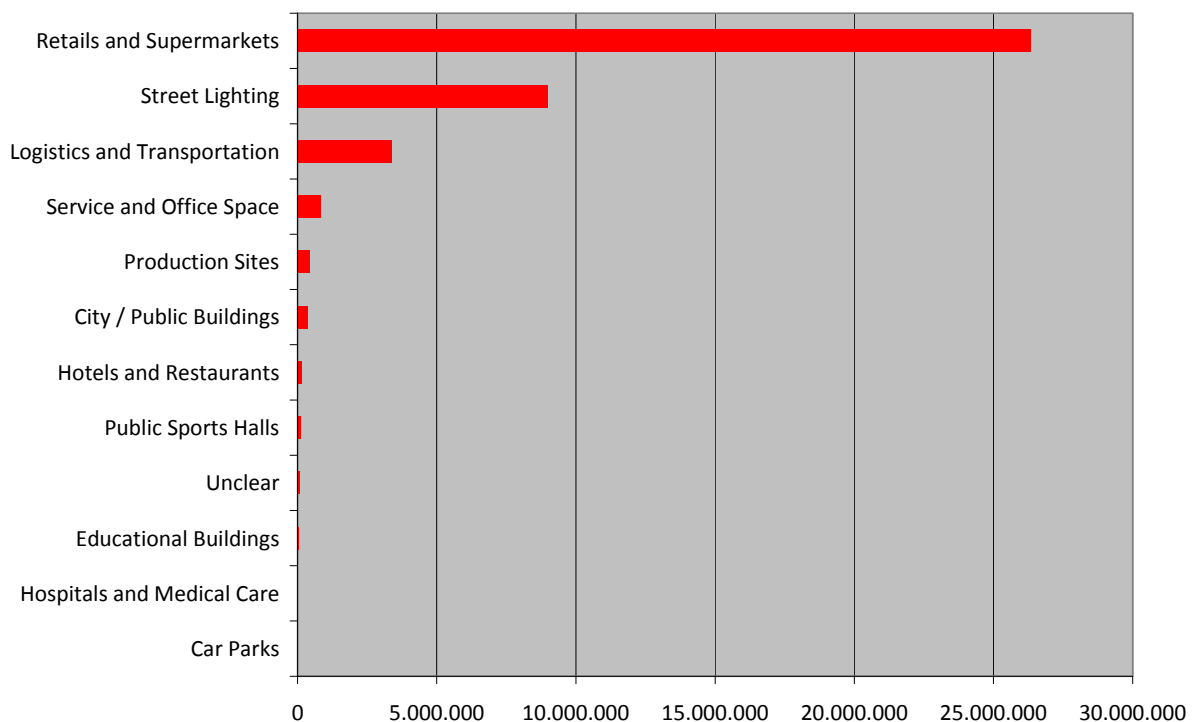
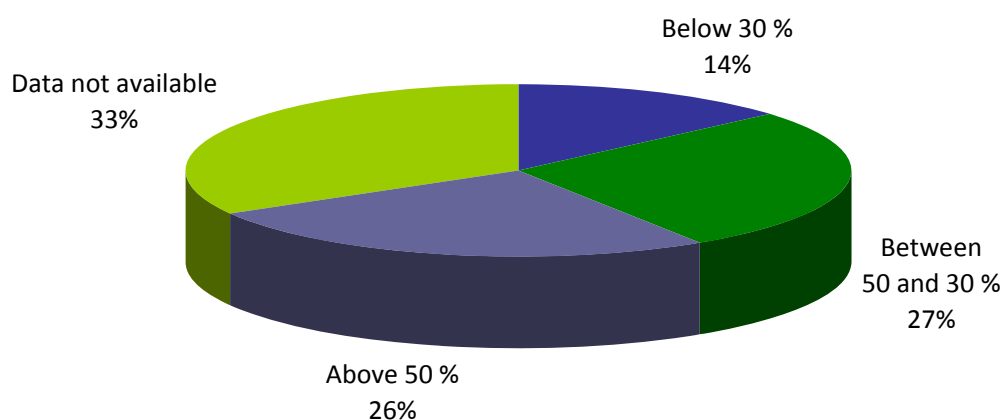


Table 6.8 GreenLight 2010: Total and Average Savings by Category		
Category	Total savings in kWh/a	Average savings per partner in kWh/a
Retails and Supermarkets	26.337.374,00	2.394.306,73
Street Lighting	8.974.673,25	472.351,22
Logistics and Transportation	3.391.000,00	3.391.000,00
Service and Office Space	819.096,86	136.516,14
Production Sites	450.398,04	112.599,51
City / Public Buildings	372.670,00	372.670,00
Hotels and Restaurants	139.815,00	139.815,00
Public Sports Halls	108.777,00	108.777,00
Unclear	71.764,00	35.882,00
Educational Buildings	40.388,00	10.097,00
Car Parks	0,00	0,00
Hospitals and Medical Care	0,00	0,00
total	40.705.956,15	830.733,80

Note: the average has only been calculated for those partners, who stated savings, i.e. in the category "City / Public Buildings" there are 2 projects, but only one indicated the energy savings, which then also represent the average. The same applies for the "Sports Halls", "Hotels and Restaurants" and the "Logistics and Transportation" categories.

As regards the percentage of effective energy savings reached, the data submitted by the Partners also showed great variation. In total, only 44 Partners supplied energy consumptions before and after the intervention allowing the calculating of the percentages. Sometime the percentages were delivered without the energy consumptions. Thus, as Figure 6.5 shows, for 33 % no data was available, 26 % of the Partners managed an effective energy saving of more than 50 %, 27 % achieved a saving between 30 % and 50 % and 14 % of the Partners did not manage to save more than 30 %.

Figure 6.5 GreenLight 2010: Effective Energy Savings reached in % Groups



Percentage range	No of projects
<15 %	2
15-20 %	1
20-25%	3
25-30%	3
30-35%	5
35-40%	3
40-45%	5
45-50%	5
50-55%	1
55-60%	6
60-65%	2
65-70%	3
70-75%	1
75-80%	1
80-85%	2
85-90%	1
n/a	22
total	66

The highest savings with 86,67% was reached in the category “Services and Office Space”, whereas the smallest percentage in savings with 8,86% was reached in the category of “Production Sites”. Table 6.9 shows the groupings of the projects according to the percentage range of energy savings achieved.

When divided into the different categories the category of “Service and Office Space” with a total of 8 projects, that have stated their percentage of savings, can be considered to be the category with the highest achieved savings (see Table 6.10). The savings reached by the category “Street Lighting” has the highest amount of projects saving in the range between 30 and 50 % of energy and also a relative high amount in the range above.

Percentage range	Categories											
	HP	LT	SP	C	HR	E	P	U	S	R	OS	total
<15 %							2					2
15-20 %											1	1
20-25%						1	1	1				3
25-30%											3	3
30-35%						1	1				3	5
35-40%											3	3
40-45%								1	3		1	5
45-50%					1		1		1		2	5
50-55%					1							1
55-60%				1						1	4	6
60-65%									1	1		2
65-70%		1				1					1	3
70-75%									1			1
75-80%						1						1
80-85%									1		1	2

85-90%									1			1
n/a	1		1	1	1	1		4	3	10		22
total	1	1	1	2	3	5	5	6	11	12	19	66

- C: City and Public Buildings
- E: Educational Buildings
- HP: Hospitals and Medical Centres
- HR: Hotel and Restaurants
- LT: Logistic and Transportation
- OS: Street Lighting
- P: Production Sites
- R: Retail and Supermarkets
- S: Services and Offices
- SP: Sport Halls
- U: Unclear
- n/a: Data not available

The average percentage of savings reached in 2010 is 46,69% (calculating those 44 data sets available). This constitutes a considerable increase compared to the previous evaluations, which stated a average of 38,9 % for 2009 and a average of 35,99 % for the period 2000 to 2008.

Figure 6.6 GreenLight 2000 to 2010: Average saving in kWh/a per Partner and Year

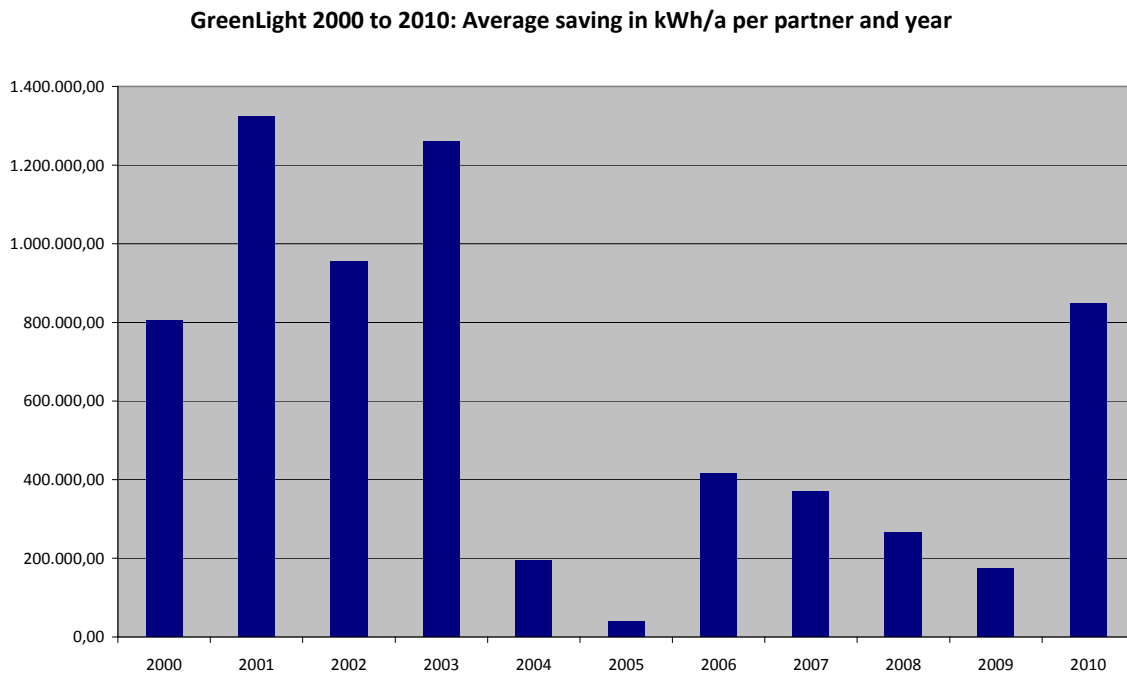


Table 6.11 GreenLight 2000 to 2010: Total Savings in kWh/a and Number of Partners per Year			
Year	Savings in kWh/a	N° of Partners	Average saving in kWh/a per Partner
2000	8.839.674,00	9	803.606,73
2001	46.312.204,00	26	1.323.205,83
2002	31.506.482,00	26	954.741,88
2003	50.364.496,03	30	1.259.112,40
2004	13.484.372,00	51	195.425,68
2005	3.142.521,59	20	39.778,75
2006	29.461.975,90	42	414.957,41
2007	36.892.976,91	75	368.929,77
2008	21.027.109,42	70	266.165,94
2009	15.993.341,22	53	174.135,90
2010	40.705.956,15	48	848.040,75
total	297.061.726,82	653	454.918,42

6.5 Cost Savings and Investments

The number of projects for which the JRC received that data on the savings (in kWh/a) was 50 out of 66, or 75,81%. The data shows that even though the “Retail and Supermarkets” category saved the largest amount regarding energy, the category “Street Lighting” brought the largest average savings regarding the costs. This is consistent also with the findings of the previous Report.

Table 6.12 GreenLight 2010: Total and Average Cost Savings by Category			
Category	N° of projects	Total savings in running cost in €/a	Average savings per partner in running cost in €/a
Street Lighting	19	1.228.190,64 €	64.641,61 €
Logistics and Transportation	1	716.000,00 €	716.000,00 €
Retail and Supermarkets	12	605.794,00 €	55.072,18 €
Unclear	6	41.672,55 €	20.836,28 €
Service and Office Space	11	37.381,36 €	6.230,23 €
City / Public Buildings	2	26.400,00 €	26.400,00 €
Hotels and Restaurants	3	9.718,00 €	9.718,00 €
Production Sites	5	8.246,00 €	2.061,50 €
Educational Buildings	5	7.549,32 €	1.509,86 €
Public Sports Halls	1	0,00 €	0,00 €
Car Parks	0	0,00 €	0,00 €
Hospitals and Medical Care	1	0,00 €	0,00 €
total	66	2.680.951,87 €	54.713,30 €

Data on the payback period was only available for 32 or 48,39% of the projects. In order to make an overview easier, the payback periods reported were grouped. The range is considerably wide reaching from below one year to above 20 years of payback time. The average payback is 4,59 years and the largest group of projects can be found in the group with a payback between 3 and 4 years.

Table 6.13 GreenLight 2010: Payback Period Grouping by Category												
Payback group in years	Categories											
	HP	LT	SP	C	HR	E	P	U	O	R	OS	total
0-1								1			1	2
1-2						1			1			2
2-3					1	1				3		5
3-4			1				1		1	7		10
4-5									1		1	2
5-6								1		1	4	6
6-7											2	2
> 7						1			1		1	3
>10						1						1
n/a	1	1		2	2	1	4	4	7	1	10	33
total	1	1	1	2	3	5	5	6	11	12	19	66

- C: City and Public Buildings
 E: Educational Buildings
 HP: Hospitals and Medical Centres
 HR: Hotel and Restaurants
 LT: Logistic and Transportation
 OS: Street Lighting
 P: Production Sites
 R: Retail and Supermarkets
 S: Services and Offices
 SP: Sport Halls
 U: Unclear
 n/a: Data not available

Only 26 projects reported on their initial investment costs and the data showed high differences. The highest investment made was reported to be 76.050.000 € within the category "Retail and Supermarkets" whereas the smallest investment made was 1.445,82 € in a project with an unclear category. Because of the small numbers in each grouping (the maximum being 3 projects with approximately the same investment made) a statement on the correlation between investments made and achieved savings was not really feasible. .

Table 6.14 GreenLight 2010: Investments Groups by Project	
Investment costs groupings in 1,000 €	No of projects
< 2	1
20-30	3
30-40	2
40-50	1
50-60	3
90-100	1
100-150	2
150-200	1
250-300	1
300-350	2
350-400	1

500-600	1
600-700	1
700-800	1
800-900	1
1000-1500	1
3000-4000	1
8000-9000	1
> 10.000	1
n/a	40
total	66

Table 6.15 GreenLight 2010: Investment Costs Grouping by Category

Investment costs groupings in 1,000 €	Categories											total
	E	HP	HR	LT	P	C	R	S	SP	OS	U	
< 2											1	1
20-30			1			1		1				3
30-40					1			1				2
40-50								1				1
50-60								1		1	1	3
90-100										1		1
100-150										2		2
150-200										1		1
250-300										1		1
300-350										2		2
350-400										1		1
500-600										1		1
600-700										1		1
700-800										1		1
800-900										1		1
1000-1500										1		1
3000-4000										1		1
8000-9000				1								1
> 10.000							1					1
n/a	5	1	2		4	1	11	7	1	4	4	40
total	5	1	3	1	5	2	12	11	1	19	6	66

- C: City and Public Buildings
 E: Educational Buildings
 HP: Hospitals and Medical Centres
 HR: Hotel and Restaurants
 LT: Logistic and Transportation
 OS: Street Lighting
 P: Production Sites
 R: Retail and Supermarkets
 S: Services and Offices

SP: Sport Halls
 U: Unclear
 n/a: Data not available

Since only 26 – less than a half – of the projects reported an initial investment is seemed more than difficult to establish clear statements about the ratio of made investment to the savings achieved in kWh/a as can be seen in Table 6.16. About 37 % invested less than 1 Euro per kWh saved per year, whereas the other 60 % invested up to 3 Euro maximum per kWh saved annually. In the 2009 Report the average ratio was 2,15 whereas in 2010 the average ratio stated by the 26 projects was 1,25. This can be seen as an important improvement of less invested money for energy saved.

Table 6.16 GreenLight 2010: Ratio of kWh/a savings to total Investments by Category

Category	Ratio kWh/a saved to total investment made in groups										
	> 0,10	0,1-0,15	0,15-0,3	0,3-0,45	0,45-0,6	1-1,5	1,5-2	2-2,5	2,5-3	n/a	total
HP										1	1
LT				1							1
SP							1				1
C	1									1	2
HR									1	2	3
E										5	5
P						1				4	5
U						1	1			4	6
S		1				1	1		1	7	11
R			1							11	12
OS	1	3	1		1	3	2	3	1	4	19
total	2	4	2	1	1	6	5	3	3	39	66
% of total reached	7,41%	22,22%	29,63%	33,33%	37,04%	59,26%	77,78%	88,89%	100%		
Average ratio kWh/a saved by total investment in € for 2010 = 1,25											

6.6 Technological Interventions

As regarding actual technological aspect of the invention, yet again the reported data is very unsatisfactory. For 24 projects no information was available on the type of lamp changes. Within the given templates, Partners had the option to report three substitutions, but often reported only a single change. Only 8 % of the Partners reported more than one change and this data is therefore omitted here. The highest quantity of changes was from “Non-specified fluorescent lamps” to LED and from “Standard high pressure mercury lamps” to “Standard high pressure sodium lamps” (see Table 6.17). In total, the highest changes were to LED, which 20 reported substitutions from 42 projects that reported on this issue making it 47,62% reported changes. This is especially noteworthy and reflects the technological progress made in this field, because LED were not mentioned in the previous reports.

Table 6.17 GreenLight 2010: Lamp Changes								
Lamps before 1	Lamps after 1							
	T8	U	HPM	T5	HPS	n/a	LED	total
Halogen							1	1
Unclear		1						1
38mm fluorescent (T12)							1	1
Incandescent							1	1
16mm fluorescent (T5)				2				2
Standard high pressure sodium				1	3		1	5
26mm fluorescent (T8)				7		1		8
Non-specified fluorescent							11	11
Standard high pressure mercury			1		10		1	12
n/a	1			1		18	4	24
total	1	1	1	11	13	19	20	66

T8: 26mm fluorescent (T8)
 U: Unclear
 HPM: Standard high pressure mercury
 T5: 16mm fluorescent (T5)
 HPS: Standard high pressure sodium
 n/a: Data not available
 LED: Light-emitting diode

The lighting technologies applied are a continuation of the trend outlined in the 2000-2008 Report and well as in the follow-up 2009 Report, which means that a transition from less efficient incandescent lamps (which was only mentioned in one single project in 2010) magnetically ballasted fluorescent lamps and/or mercury vapour lamps, to more efficient electronic fluorescent lamps and compact fluorescent lamps as well as very high efficient LED can be seen.

For the changes in ballast and luminaries, the data submitted is not sufficient, with less than 20 % of Partners reporting on this issue. Overall it can be seen that also – were reported- the ballasts were changed from conventional to electronic dimmable or the luminaries were changed from regular reflector to aluminised reflector. But since these changes are only evident for less than 10 projects, not further evaluation was done here. 26 projects or 39,39% reported an upgrade of Lighting controls as well on an upgrade of the Regulation.

Also a correlation between technology chosen after the intervention (Lamp after 1) and the effective energy savings reached in percent suffers from the documentation gaps and does not allow to give a very clear indication (see Table 6.18). For example, within the LED category more than half of the projects did not supply any data, approximately the half have saved more than 50 % of energy, whereas the other half saved between 30 and 50 %. The highest savings were indicated for a change to a T5 fluorescent lamp.

Table 6.18 GreenLight 2010: Lamp Changes in Correlation to Percentage Energy Saved

Effective Energy Savings in %	Lamps after 1							
	T8	HPM	U	T5	HPS	n/a	LED	total
<15 %		1		1				2
15-20 %					1			1
20-25%				1		2		3
25-30%					1	1	1	3
30-35%				1	3	1		5
35-40%					2		1	3
40-45%				2	1	2		5
45-50%				1	2		2	5
50-55%				1				1
55-60%				1	3	1	1	6
60-65%	1			1				2
65-70%						1	2	3
70-75%			1					1
75-80%						1		1
80-85%							2	2
85-90%				1				1
n/a				1		10	11	22
total	1	1	1	11	13	19	20	66

T8: 26mm fluorescent (T8)
 HPM: Standard high pressure mercury
 U: Unclear
 T5: 16mm fluorescent (T5)
 HPS: Standard high pressure sodium
 n/a: Data not available
 LED: Light-emitting diode

8. Conclusions

The overall development of the GreenLight Programme in 2010 showed that Partners were able to increase the amount and percentage of energy saved compared to the last evaluation. Partners were able to reduce the energy used for lighting considerably with an average of 46,69% energy saved compared to before the intervention and with an average of 4,59 years of payback time. The ratio of investment to kWh saved per year was also reduced compared to the previous reporting. However, it is very difficult to draw general conclusions based on the insufficient data contributed by the Partners especially in the field of technologies applied. In general, the change to energy efficient LED lighting seems to constitute a trend previously not seen within the GreenLight community.

A further not as positive development is to be seen in the downturn in newly registered Partners especially from the New Member States. However, awareness saturation with the prime target group has to be expected within a programme now running for more than a decade.

The public recognition and positive image as well as the respectable results achieved in overall savings underline that the GreenLight Programme is worth to be continued, albeit perhaps with increased efforts.

9. Recommendations

Overall it can be stated that the GreenLight Programme constitutes a successful voluntary commitment scheme, where individual partners have achieved respectable results. The scheme itself has now been running for more than a decade and a certain downward development in new registrations can be seen, which follows a natural life-cycle of these kinds voluntary activation programmes. It might be useful to undertake a new strategic orientation of the scheme in order to reach out to new target groups. This however is always a question closely tight to financial and manpower resources. An update of guidelines, assisting materials and enhancement of the website including electronic registration functions might be able to make application and registration easier. This could also include a modernised electronic reporting possibilities and functions via the website such as a proper log-in accessible databank, which would allow the JRC to better evaluate and access the success and results. This again would contribute to the diffusion and promotion of the scheme.

9. Appendices

I. List of Partners which joined the GreenLight Programme in 2010.

1. AFFIPARIS
2. Areva NP
3. Banc de Sang i Teixits
4. Basurto Hospital railway station of FEVE
5. Bosch Venissieux
6. CaetanoBus
7. City of Klanjec
8. City of Ozalj
9. City of Tilburg
10. City of Zaprešić
11. Decatholon Geologic
12. Delhaize Group Belgium
13. Diemermere Beheer BV
14. DOMYOS (groupe OXYLANE)
15. Donja Stubica
16. ETAP NV
17. Gemeente Edam-Volendam
18. Gemeente Hoeselt
19. Gemeente Utrecht
20. Gemeentebestuur Neerpelt
21. Gemeinde Koenigsfeld
22. Gemeinde Moenchweiler
23. Gemeinde Uedem
24. GRUPO CS
25. ING Luxembourg
26. Kampffmeyer Food Innovation GmbH
27. MAIRIE DE PARIS Section Locale d'Architecture du 18ème arrondissement
28. MBZ N.V.
29. Mercure Wien City - Pannonia Hotelbetriebsgesellschaft
30. Město Brandýs nad Labem - Stará Boleslav/ Brandýs nad Labem - Stará Boleslav Municipality
31. Ministère de l'écologie, de l'énergie, du développement durable et de la mer
32. MODELIM
33. Municipality of Marija Gorica
34. Municipality of Pusca
35. Nestlé France
36. Prokind Scholengroep
37. Snecma
38. SNFC
39. Stadt Cottbus
40. Stadt Freiburg im Breisgau
41. Stadt Hamburg LSBG
42. Stadt St. Georgen
43. Technische Betriebe Dormagen AöR
44. TROPICANA
45. Unibail Rodamco / Efirenova
46. Unibail-Rodamco Inversiones
47. Vyškovské Služby
48. Zeisterwounde Zorgcentrum

II. Winners of the Green Light Awards

2003

1. Statoil (Norway)
2. Apoteket AB (Sweden)
3. Comune di Trezzano Rosa (Italy)
4. Lorentz Casimir Lyceum (The Netherlands)
5. Monte dei Paschi di Siena (Italy)
6. Neukauff Merz (Germany)

2004

1. Athens International Airport (Greece)
2. Carrefour Italia (Italy)
3. City of Hamburg (Germany)
4. City of Helsinki Educational Department (Finland)
5. City of Zurich (Switzerland)
6. Dolce & Gabbana (Italy and Germany)
7. Futebol Clube do Porto (Portugal)
8. Gemeente Sittard-Geleen (The Netherlands)
9. Groupe Casino (France)
10. Dn BNOR ASA v/Vital Eiendom AS (Norway)

2005

1. San Paolo IMI (Italy)
2. Provincia di Reggio Emilia (Italy)
3. TIM (Greece) – today WIND
4. Auchan (France)
5. Q8 (Denmark)
6. Centocor (The Netherlands) – today SenterNovem
7. Halliburton (Norway)
8. EDP (Portugal)
9. McDonald's (Europe)
10. Wipark (Austria)

2006

1. City of Oslo (Norway)
2. COOP (Italy)
3. Gates Europe nv (Belgium)
4. Hospital Universitario Virgen de las Nieves de Granada (Spain)
5. Nyborg Municipality (Denmark)
6. Philips (The Netherlands)
7. Piraneus Bank (Greece)
8. Servicio Extremeno de Salud (Spain)
9. SP-Tratek (Sweden)
10. Stadt Graz (Austria)
11. Stadt Frankfurt am Main Hochbauamt (Germany)
12. swb Netze Bremerhaven (Germany)
13. Vodafone Portugal (Portugal)
14. Zehnder Group Produktion Graenichen (Switzerland)

2008

1. Dumaplast NV (Belgium)
2. Stadsbestuur Sint-Niklaas (Belgium)
3. Municipality of Gorna Oryahovitsa (Bulgaria)
4. Zlin Municipality (Czech Republic)
5. Town of Kladno (Czech Republic)
6. Bic (France)
7. Communauté Urbaine de Dunkerque (France)
8. Kautex Textron GmbH (Germany)
9. Unicredit (Italy)
10. Comune di Piombino (Italy)
11. Kaunas Municipality (Lithuania)
12. Stadhuis Amsterdam (The Netherlands)
13. DSM (The Netherlands)
14. Instituto Superior de Engenharia do Porto (Portugal)
15. METRORÉX (Romania)
16. Parliament House (Romania)
17. PREDILNICA LITIJA d.o.o (Slovenia)
18. TAIM-TFG S.A (Spain)
19. Vattenfall Service Nord AB (Sweden)

2010

1. Dagda Town Council (Latvia)
2. ING Real Estate (The Netherlands)
3. E-on (Germany)
4. O.S.V.O Comp, a.s. (Slovakia)
5. Municipality of Dobrich (Bulgaria)
6. Prague Marriott Hotel (Czech Republic)
7. Public Service of the City of Villingen-Schwenningen (Germany)
8. Saule Birinius Pils SIA (Latvia)
9. NH Hotels (Spain)
10. Aguas do Cavado (Portugal)
11. Decathlon (Spain and Romania)
12. Center of Dialysis in Bearn Pau-Aressy (France)

2011

1. City of Tilburg (The Netherlands)
2. City of Zaprešić (Croatia)
3. Delhaize Belgium (Belgium)
4. Gemeinde St. Georgen (Germany)
5. ING Luxembourg (Luxembourg)
6. MBZ N.V. (Belgium)
7. Nestlé France (France)
8. Prokind Scholengroep, (The Netherlands)
9. Unibail-Rodamco shopping centres (Spain)

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Abstract

The GreenLight Programme is a voluntary programme launched by the European Commission in 2000 to increase non-residential lighting energy efficiency. By the end of 2010, over 653 Partners from across the European Union, plus Norway and Switzerland, participated in GreenLight. This report assesses the achievements of the programme in the year 2010. For 2010, 48 new Partners were welcomed into the programme.

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Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new standards, methods and tools, and sharing and transferring its know-how to the Member States and international community.

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