

A Bottom-up approach in residential lighting strategy in Latvia.

Lessons learned

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ABSTRACT

The residential CFL campaign was built on a grass roots approach starting with a pilot project in three small municipalities in Latvia within the framework of the "IFC/GEF Efficient Lighting Initiative" (ELI) program. The pilot project allowed testing of a bottom-up approach to energy efficiency. Following are the lessons learned.

BACKGROUND

Energy efficiency problems are becoming more and more common among end users in Latvia. The development of energy efficiency is proceeding through the implementation of national and international programs.

The IFC/GEF Efficient Lighting Initiative (ELI) is a three-year program designed by the International Finance Corporation (IFC) and funded by the Global Environment Facility (GEF) to accelerate the penetration of energy-efficient lighting technologies into emerging markets in seven countries. Latvia is one of them. ELI started in Latvia in March 2000. The Latvian consulting firm Ekodoma is responsible for local implementation of ELI.

The main goal of ELI is to reduce greenhouse gases emissions through the efficient use of energy in lighting.

ELI program elements were designed to generate market transformation effects and accelerate the growth of markets for efficient lighting technologies. ELI in Latvia included the following activities:

1. Organizing CFL campaigns within the residential sector
2. Facilitating the development of efficient lighting standards and norms
3. Conducting Public education program
4. Developing efficient street lighting projects in municipalities
5. Creating lighting ESCOs in Latvia

This report will focus on ELI Latvia team activities within the residential sector.

The ELI program started with an investigation of the market for efficient lighting products. Market studies illustrated that CFLs were not very well known: Most frequently, respondents could spontaneously name only incandescent lamps (98.2%). Next in frequency were fluorescent lamps (23.1%), CFLs (21.9%) and halogen lamps (17.8%). Only 21.9% of respondents mentioned CFL. Respondents most frequently use incandescent lamps (97.7%) at home. Other types of lighting are used less frequently. CFLs are used by only 12.6% of respondents. Based on survey data two initial stages of the CFL campaign were implemented in the residential sector: a pilot project in 3 municipalities (with populations between 5,000 and 10,000) and follow-up activity in 5 municipalities (with populations between 10,000 and 20,000) where the "grassroots" approach has been tested. The pilot and follow-up project confirmed that the chosen communication strategy and messages conveyed reached the audience and showed that it is a successful method for small municipalities.

However it was decided the “grassroots” approach cannot be used directly in big cities and it was modified to reflect the greater size of these cities. In December 2001, the ELI Latvia team successfully organized the CLF campaign, “More Light for Less Money” in one of the largest cities of Latvia – Liepaja, which has a population over 90,000. The large city approach was tested in order to prepare the CFL campaign for Riga (with a population over 800,000) for November 2002.

This paper will analyze the pilot phase of the ELI program in the residential sector in Latvia. The pilot project of the CFL campaign was completed in 3 municipalities: Broceni (3,000 inhabitants), Dobele (10,000 inhabitants), Ludza (10,000 inhabitants) between October and December 2000. The follow-up activity was completed in 5 additional municipalities during March and April 2001.

RESULTS OF THE MARKET STUDY

The local market research company “SKDS” did market surveys on issues surrounding CFL penetration and lighting use in Latvia’s largest cities, in June 2000.

The results of the telephone interviews showed that lighting in households is, in order of frequency, purchased by women (68.5%), older respondents above age 55 (42.6%), respondents with general secondary education (26.6%), secondary professional education (33.5%) or higher education (25.6%), respondents living in flats (86.3%), and Latvian speaking respondents (59.6%).

Most frequently, respondents could spontaneously name incandescent lamps (98.2%). Next in frequency were CFLs (21.9%) and halogen lamps (17.8%). Only in 21.9% of respondents mentioned CFL.

Respondents most frequently used incandescent lamps (97.7%) at home. Other types of light sources are used less frequently. CFLs are used by 12.6% of respondents and halogen lamps are used by 6.5% of respondents.

Almost one half of all respondents (40.9%) could not name any differences between CFLs and incandescent lamps.

18.8% of all respondents who live in Latvia's largest cities said that they have purchased CFLs.

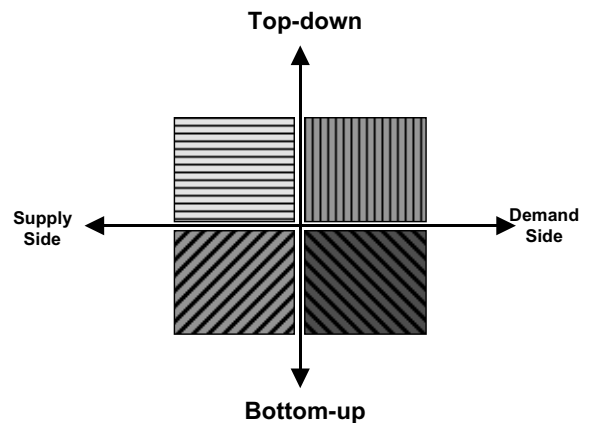
The predominant reason the respondents gave for never buying CFLs was the lack of information (40.5%). The second most frequently mentioned reason was the high purchase price of CFLs (31.8%).

The data showed that inhabitants of Latvia's largest cities are not, in general, well informed about CFLs. 33.3% of all respondents admitted that they had heard about them for the first time during the interview. Most frequently respondents said they obtained information about CFLs from various media (30.4%), and less frequently from friends (15.0%).

The ELI Latvia team had constructed a strategy for introducing the residential sector to efficient lighting. The strategy was based on survey data analysis. It was decided to implement the CFL campaign step by step:

First step: Implement pilot project in small municipalities to test approach.

Figure 1. Combination of four approaches for the pilot project



Second step: Commence large city (~ 70 000 – 100 000 inhabitants) activity to develop ideas for CFL campaign in Riga, the capital of Latvia (800,000 inhabitants).

Third step: Implement CFL campaign in Riga.

ANALYSIS OF PILOT PROJECT STRATEGY

Methodology

The analysis of strategy of the pilot projects was implemented by the use of top-down / bottom-up & supply side / demand side methodology developed by [4, 5].

The pilot lighting project in the residential sector will be analysed as a combination of four approaches and it can be expressed in a Cartesian diagram where:

- X axis: supply side / demand side;
- Y axis: top-down / bottom-up.

The graphic view is given in Figure 1.

These four approaches can be described as follows:

- *Top-down approach* - Related mainly to the activity of governments and/or institutions when introducing new regulations, standards and policies.
- *Bottom-up approach* - Organizing the needs of a municipality and inhabitants preparing the documents and participating in activities, which comply with these needs.
- *Demand-side approach* - Concerns the end-users and their needs: economic opportunities, quality of life, housing etc.
- *Supply-side approach* - Refers to the capability of the market to organize the production of goods and technologies, which respond to consumers’ needs.

These four approaches can be equally effective in identifying objectives for energy efficient activities including energy efficient use of lighting.

Top-down approach

- Develop national energy strategy
- Support energy efficient lighting projects
- Consider external environmental impacts and costs of acquiring new technologies

Bottom-up approach

- Prepare local policies and plans to support environmental-friendly energy efficiency activities in a municipality
- Establish team for implementation of energy efficiency activities
- Encourage the efficient use of resources by energy consumers

Demand-side approach

- Educate residential sector about the products to be an informed consumer
- Transfer of efficient lighting market concerning reduction of prices: higher demand – less price
- Introduce with economically feasible loan conditions for efficient lighting technology

Supply-side approach

- Provide wide range of high quality energy efficient lighting technology.
- Reduce price for high quality energy efficient lighting technology

Application of methodology

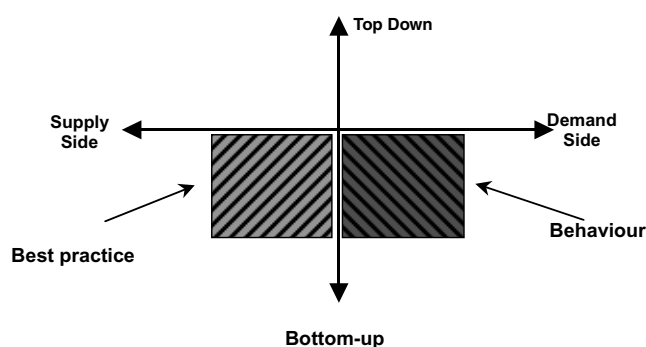
Three local governments participated and promoted the lighting pilot project in the residential sector: the municipalities of Broceni, Dobele and Ludza. The proposal came from the ELI Latvia team, which worked out the action plan of the CFL campaigns in the above-mentioned cities. The municipalities to be the main actors in and champions of innovation for the CFL campaign were selected after consideration of a number of alternatives. Included in this group of potential alternatives were electrical utilities, banks, a national telecommunication company, a natural gas supplier and DH companies as well as other municipalities.

Bottom up/Demand side

A municipality was selected to test the promotion of energy efficiency ideas. Municipalities in close cooperation with ELI Latvia team participated in the information process as well as supported the inhabitants financially. Activities followed these steps:

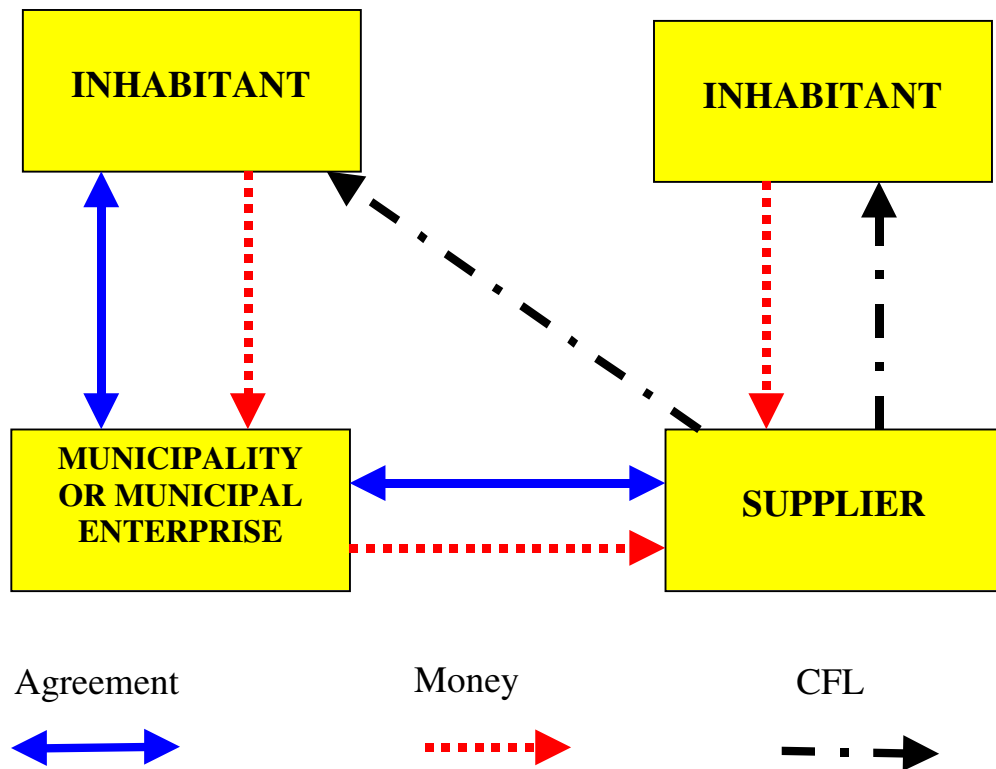
- The ELI Latvia team (with the support of the coordinators of the ELI program) make decision (September, 2000) to test the CFL campaign in a small city and to involve in the pilot project the municipality (3.500 inhabitants) of Broceni

Figure 2. Bottom-up approaches used for the pilot project



- On the invitation of the ELI Latvia team, the Broceni City Council decided to participate in the CFL campaign (October, 2000). The municipalities of Dobele (12.000 inhabitants) and Ludza (10.000 inhabitants) joined them in November 2000. The municipalities selected responsible persons (one in each). These three people worked together closely.
- The pre-campaign period (October – December 2000) was used for:
 - The dissemination of information including leaflets, posters, a survey of the inhabitants, physics lessons in schools, a competition of paintings and essays among school pupils, the organization of events for specific information days called “Lighting Days”
 - The ELI team assisted in the preparation of a package of documents for the bulk purchase of CFLs, and for a contract between the municipality and the CFL manufacturer that was the winner of the competition
 - The pilot project allowed testing of a strategy of providing of loans to inhabitants. Loans were only given to those inhabitants who do not have debts with the municipality. The loan period varied from town to town (from six to twelve months) but all of them were non-interest loans. A loan agreement was signed between the municipality and inhabitants during sales process.
- The campaign ended with CFL sales activities (three days before Christmas). The Broceni case was the most successful since every second household purchased one CFL.

The municipality or municipal organisations during the campaign made possible for inhabitants to take small loans (5 – 30 USD) to secure CFL lamps. Consumers showed comparatively quite big interest about this option (~30% in Broceni and ~50% in Dobele). ELI team worked out agreement between Supplier of CFLs (Philips) and Municipality (or municipal enterprise). It was tested and accepted by Broceni and Dobele municipalities as well as used in follow up activities. Flows of money and CFLs are presented in Figure 3. According to arrows in diagram inhabitants had two possibilities of purchasing of CFLs: to pay in cash or to sign loan agreement with municipality.

Figure 3. Financial and organizational scheme of loan

CFL campaign delivered additional value. The municipality and inhabitants have gotten introduced with new type of credit possibility. That moved the financial system and thinking to the new level of development. Introduction of inhabitants “how to get small loan” was significant input of ELI Program in financial education of people (particularly for low income).

The municipalities played the very important role of “champion of innovation”. They presented the best lighting practices to local society during the implementation phase of the pilot project. The success of the CFL campaign was ensured by specific behavior of people living in pilot project areas. They allowed themselves to be open to innovative ideas. Representatives of the municipalities and the residents themselves demonstrated strong interest and responsiveness to efficient lighting activities in their cities. The bottom-up/ demand side approach is presented as behavior in Figure 2.

Bottom-up/Supply side

All CFLs sold during campaign conformed to ELI qualification standards for CFLs. Three companies -- Philips, Osram and GE, which all have representation in Latvia -- participated in the ELI qualification process. A number of different types of CFLs (produced by these companies) were qualified. Results of CFLs campaigns could be better if all three companies were more active and interested in this.

The price of CFLs was the most important barrier to their wide use. Therefore particular attention was paid to explaining, in an easily understandable way, how one can save money by using CFLs and what is the link between energy saving and a lower electricity bill. The other most important feature of CFLs is the long lifetime, which also needs explanation, with special regard to the advantages of longer (6,000 hours or more) lifetime CFLs. The longer lifetime means not only saving money, but is also an aspect of convenience since bulbs do not have to be changed nearly so frequently. The message was, “Buy a CFL because you can have a lower electricity bill through less energy consumption and a longer life span”.

The second stage of the public information campaign included information on the guarantees with CFLs. It also included reference to the one-year warranty provided by the manufacturers. The provision of this warranty was pointed out to indicate high quality too.

The third stage the public information campaign contained information that addressed widespread misconceptions about CFLs, such as, “CFLs have a bad influence on health” or, “CFLs interfere with radio transmission”.

The bottom - up/ supply side approach is shown as best practice in Figure 2.

Top-down/Supply side

Government has always played important role in the promotion of modern energy efficient technologies. Latvia as one of the EC candidate countries is preparing a legisla-

tive basis to conform to EC directives. For example, the Latvian government worked out a system of energy efficiency labeling for the lighting sector. As well, manufacturers have always played the main role in the development of know-how technologies. The ELI Latvia team established good relations, which led to excellent co-operation, with the CFL suppliers (Philips, Osram and GE) during pre-campaign period.

The pilot project demonstrated ways and means of implementing innovative energy technologies. The approach is top-down because “know how” lighting technologies are worked out by the top level of well known certified manufacturers. Three municipalities organized tender competition for bulk purchase between efficient lighting producers which could provide CFLs with ELI Program certificate. Philips as winner took part in all phases of pilot project and introduced with efficient lighting technologies. Representatives of manufacturers played significant role in development of innovative energy technology ideas. A top-down/supply side model is illustrated as efficient lighting technology in Figure 4.

Top-down/Demand side

The investigation of potential supporters of an efficient lighting initiative allows definition of tasks and organizations, which are overseeing energy efficiency measures. Different programs estimate energy saving opportunities within the framework of activities of USAID, PHARE, EC OPET, GEF, etc. Banks and foundations are providing loans. The Latvian government developed several documents in connection with the promotion of energy efficiency measures, the latest of which is called, A National Energy Efficiency Strategy (2000). One of the tasks in this document is energy labeling of technologies. Cabinet of Ministers has issued Regulation of Energy Use Labeling. ELI team Latvia assisted in preparation of this document and information brochure. Government is realizing policy of consumer protection through this document.

The pilot project fulfills the tasks of the governmental energy efficiency strategy and demonstrated ways and means by focusing on the implementation of efficient use of energy for lighting on the end user side. Consumer protection policy of government is one of the state activities directed to assistance of energy end users side. A top-down/ demand side approach is shown as government documents in Figure 5.

Follow up activities

Experience of Dutch researchers showed that many environmental (including energy efficiency) innovations are only applied in stage of demonstration projects [6,7]. They have proposed establishment of change agency to reach appropriate results. The main task for agency could be dissemination of information about results and possibilities of innovative technologies. Investigation and comparison of case studies in 8 European countries allowed to make conclusions and recommendations which have to be taken into account in implementation of innovative ideas. Fac-

Figure 4. Role of manufacturers of efficient lighting technologies

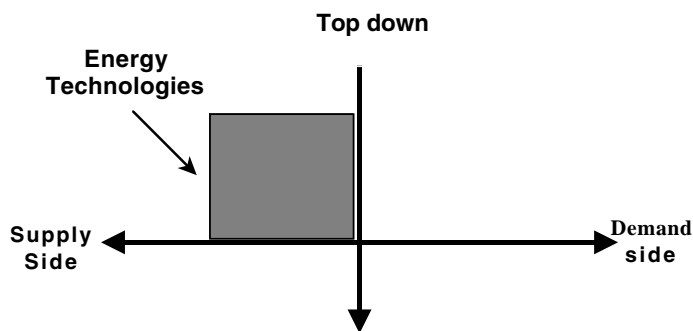
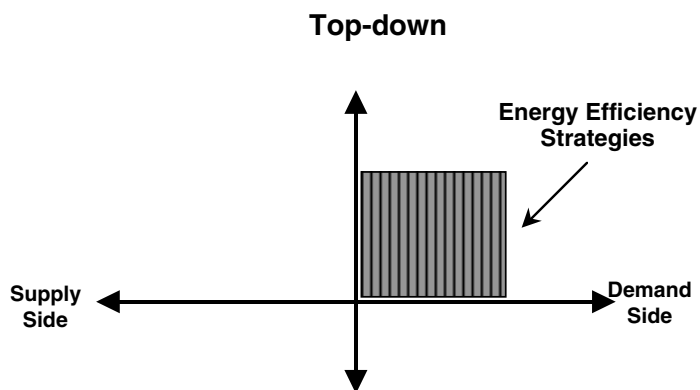


Figure 5. Role of governmental energy efficiency strategy



tors which influenced the diffusion of environmental innovations in housing are following [6,7]:

- quality of innovation;
- organization of the demonstration project;
- organization of the information transfer;
- influences of government (including local government).

Experience of ELI Latvia team confirmed importance of all four factors. Organisation of information transfer (the change agency) plays significant role in follow up activities. Ekodoma has taken the duties of change agency: transferred information in the pilot stage as well as in the follow up activities. The use of Ekodoma as change agency has following advantages:

- experience in cooperation with municipalities;
- knowledge in promotion of energy technologies in EC OPET networking;
- experience in evaluation of best practices in energy sector;
- experienced persons for opinion leaders.

The pilot project of the CFL campaign finished in January 2001 with an analysis of the results of activities. The evaluation of this stage of the CFL campaign was presented in a book form in Latvian to assist replication of similar activities. The target group of this material are representatives of municipalities, who are potential users of the bottom-up approach for similar efficient lighting campaigns. The book presents an analysis of the data and the results of the CFL campaign in Broceni, Dobele and Ludza as well as including a package of documents prepared during the campaign, which could be used in future activities. Sale of CFLs was increased by over 2,000% during campaign.

The pilot project results were presented to 10 selected municipalities at the end of January 2001. Five municipalities expressed interest in participating in a follow up CFL campaign. These include Limbazi (10,000 inhabitants), Ogre (20,000 inhabitants), Valmiera (30,000 inhabitants), Madona (15,000 inhabitants) and Piltene (1000 inhabitants). They approved of the "grass roots" approach of the CFL campaign and used several elements of the pilot project case. Follow up activities were successful in three municipalities but were less successful in two cases because the start of the efficient lighting activities were delayed until the end of April and beginning of May when there were longer periods of daylight and therefore less need of artificial light.

The second part of the ELI Latvia activities in the residential sector is a municipal CFL campaign in a large city in the light season 2001/2002 followed by a CFL campaign in the capital of Latvia in the light season 2002/2003. The large town selected for the campaign for this light season has around 80,000 inhabitants. The capital of Latvia, Riga, has ten times more people -- around 800,000.

This communication strategy was used in the two initial stages of the CFL campaign in the residential sector. First was a pilot project in 3 municipalities and then follow-up activity in 5 municipalities where the "grassroots" approach has been tested. The pilot and follow-up projects confirmed that the chosen communication strategy and messages conveyed reached the audience and showed that it is a successful method for small municipalities. However the "grassroots" approach cannot be applied directly in big cities and it should be modified. Main reason is that contacts between of municipalities and inhabitants in smaller cities are much more closer and therefore acceptance of innovative ideas, which come from local government, are higher than in bigger towns. This difference should be taken into account in larger cities.

According to European experience in environmental innovation projects in housing sector change agency has to continue transfer of information about certain idea for long time. Ekodoma started transfer of information about efficient lighting idea two years ago and planned to continue it as minimum one year.

The proposed activities of the ELI Latvia programme will reach 30 ... 40 % of the inhabitants of Latvia.

CONCLUSIONS

1. A market study of lighting technologies used in residential sector showed low awareness of CFL advantages in the residential market of Latvia today. Only 22% of citizens are informed about CFLs.

2. The chances of success are greatly enhanced by a municipal bottom-up or "grassroots" approach, which combines municipal interest in assisting the citizens with the ELI goal to increase CFL sales. The pilot project showed good local results. The Broceni case was the most successful: Every second household purchased one CFL.

3. Third party plays significant role in implementation of energy efficiency measures. Ekodoma kept the ideology of efficient lighting, energy savings and global climate changes.

4. The CFL market has developed slowly because of high CFL prices. Philips, Osram and GE dominate in the market. Results of CFLs campaigns depend from attitude of main CFL manufacturers: all three companies could be more active and interested in this.

5. A pilot project allows approach to be tested, and schemes and documents worked out for efficient lighting campaigns. The pilot case was proven in follow-up activities in 5 additional municipalities. Ekodoma played significant role of change agency, which have to continue operation as opinion leader of efficient lighting activity.

6. More parties can be involved in future activities. Municipalities are showing increasing interest in participating in the promotion of an energy efficient lighting program for the residential and public sectors. The electrical utility firm LATVENERGO is now becoming more active in assisting in similar CFL campaigns.

7. The communication strategy was used in the two initial stages of the CFL campaign in the residential sector -- the pilot project in 3 municipalities and follow-up activity in 5 municipalities where the "grassroots" approach has been tested. Both the pilot and follow-up projects have confirmed that the selected communication strategy and messages conveyed reached its audience and showed that it is a successful method for small municipalities. However, it also revealed that the "grassroots" approach cannot be used directly in big cities and should, therefore, be modified.

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