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Bulgaria – Serbia
IPA Cross-Border Programme

R E P O R T

by anonymous survey conducted after the students in primary and secondary schools
in the Municipality of Pernik for their level of awareness
on the topic of energy efficiency in school and at home, and to protect the environment

The Report was prerared:

based on a contract SERVICE CONTRACT FOR EUROPEAN UNION EXTERNAL ACTIONS, N° 003/30.05.2014, FINANCED FROM THE EU GENERAL BUDGET, NO 2007CB16IPO006-2011-2-78 "Energy efficient schools - our children deserve it", contract № РД-02-29-441/18.12.2013 "Energy consumption analysis and survey – bl.5 " Identification number 2007 CB16IPO006-2011-2-78-3 –SER. FINANCED FROM THE EU GENERAL BUDGET
in connection with a project for cross-border cooperation between Bulgaria and Serbia: Bugaria-Serbia IPA Cross-border Programee:
Project №2007CB16IPO006-2011-2-78 "Energy efficient schools - our children deserve it"

from **"GRN POWER BULGARIA" Ltd.** (**GRN**Power**Bulgaria**®) with headquarter and management address : 1404 Sofia , quarter "Strelbishtre" block 31A, ap.19 registered in the Public Register of the Registry Agency , UIC 201658843 , of the Sofia city Court, represented by Dipl. Eng. Vyara Nikolaeva Zlateva - Manager, holding a certificate №00309/20.09.2011 for registration in a public register of persons performing energy efficiency audits and certification of buildings according to Article 23a paragraph 1 of the Energy Efficiency Law (EEL) and Certificate №00067/12.07.2013 for registration in a public register of persons performing energy efficiency audits of industrial systems according to Article 34a paragraph 1 of the Energy Efficiency Law (EEL)

I. ANALYSIS OF RESULTS HELD AFTER ANONYMOUS QUESTIONNAIRE THE STUDENTS IN PRIMARY, SECONDARY AND VOCATIONAL SCHOOLS IN MUNICIPALITY OF PERNIK TO THEIR LEVEL OF KNOWLEDGE ON THE SUBJECT OF ENERGY EFFICIENCY IN SCHOOL AND AT HOME, AND ENVIRONMENT

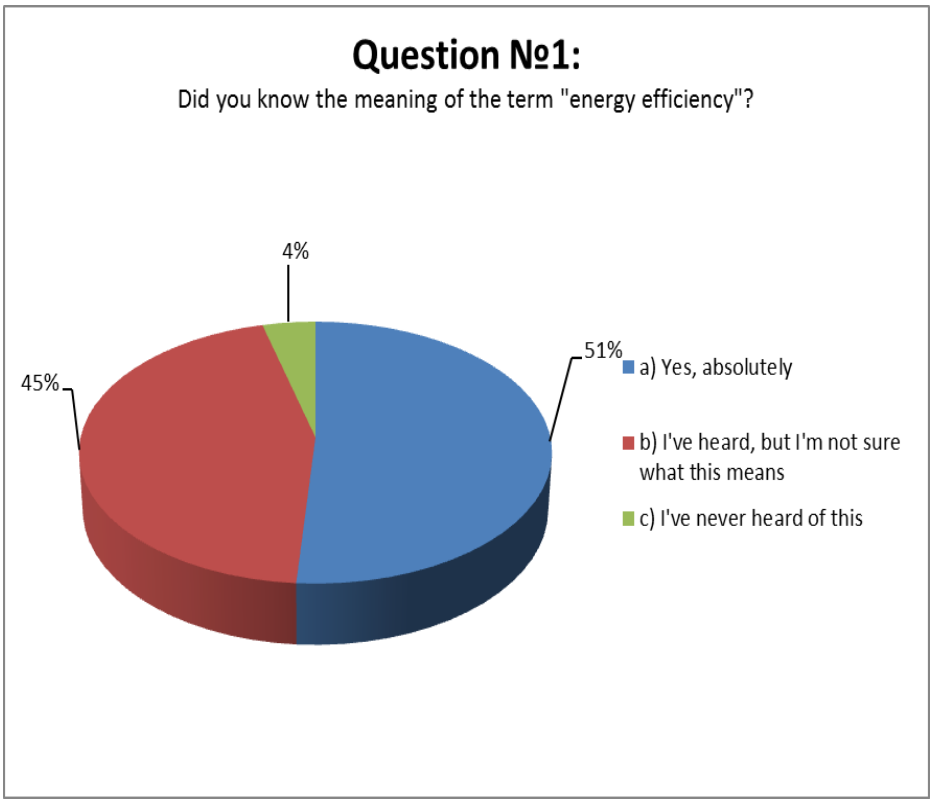
In this report are presented in graphical form the results of the anonymous survey among 347 students in primary and secondary education in the school 2013/2014g. municipal and state schools in the Municipality of Pernik, conducted by **GRN POWER Bulgaria Ltd.** (**GRN**Power**Bulgaria**®).

The questions included in the questionnaire anonymously survey are developed in partnership with colleagues representing partners in IPA Cross-Border Programee, Serbia – Mechanical Engineering Faculty of the University of Nis.

The project „Energy Efficient Schools – Our children deserve it", Subsidy contract under IPA No РД-02-29-441/18.12.2013has been implemented with the assistance of the European Union through the Bulgaria-Serbia Cross-Border Programme CCI No 2007CB16IPO006. The contents of this document are the sole responsibility of The Faculty of Mechanical Engineering, University of Nis and can in no way be taken to reflect the views of the European Union or the Managing Authority of the Programme.

The purpose of this study is to obtain the knowledge and opinions of students of Pernik Municipality in the field of energy efficiency and environmental protection. The results of this study will be published in two brochures, one aimed at students and the second for adults - their teachers, parents, neighbors, friends, representatives of local government and the Ministry of Education and science to undertake activities on reasonable energy consumption. This increases the interest and motivation for children to contribute to environmental protection.

Main objective of the project, through the provision to hold in the fall of 2014 seminars among students in municipal and state schools in Pernik, is - the children of Europe to learn about the problems of global warming and the efficient use of energy, with the judicious use of finite energy sources, with different options for energy production from renewable energy sources /RES/ to understand their role and contribution to the preservation of our environment and thereby creating a sustainable future for the planet.



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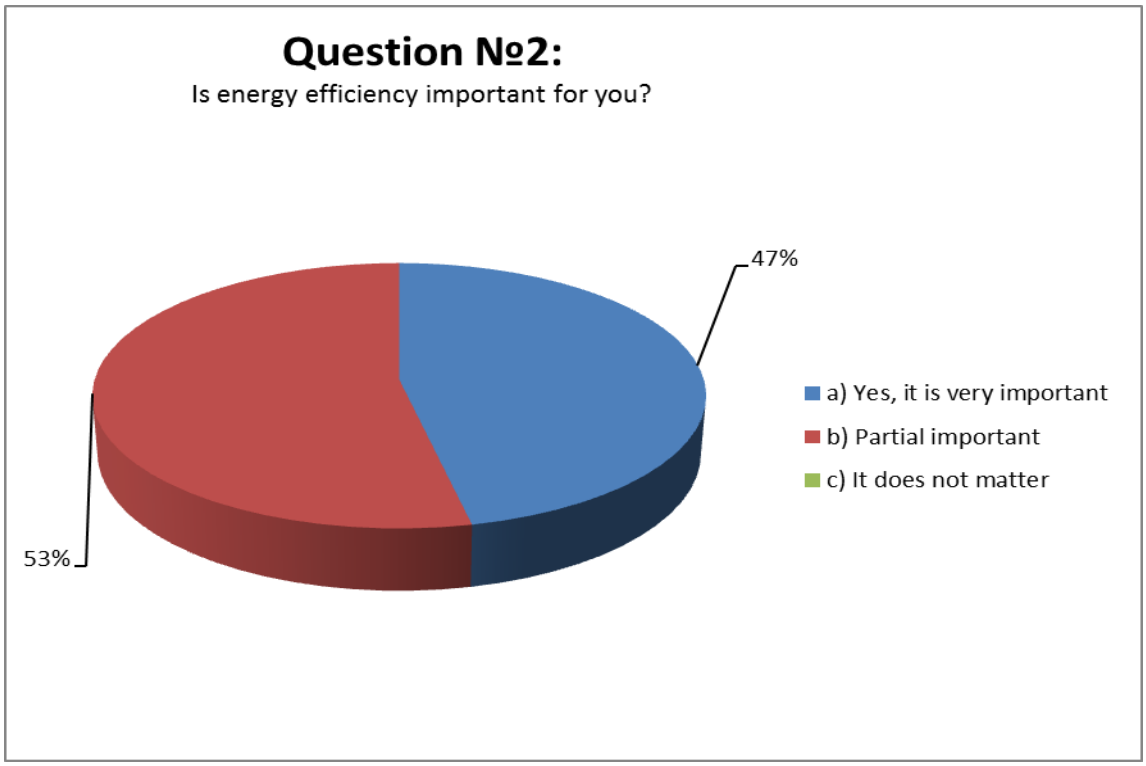

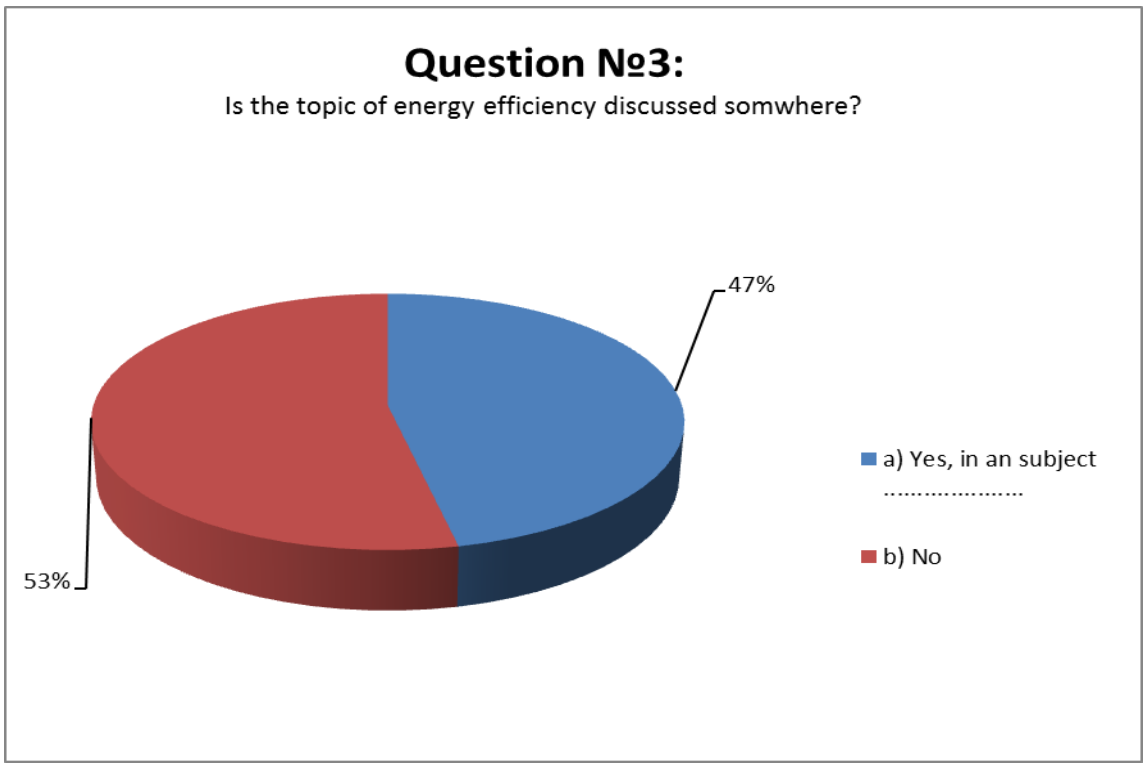

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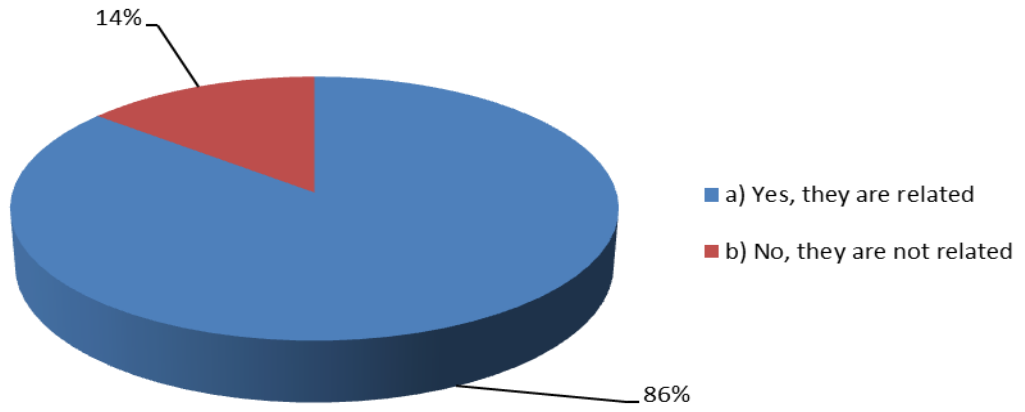
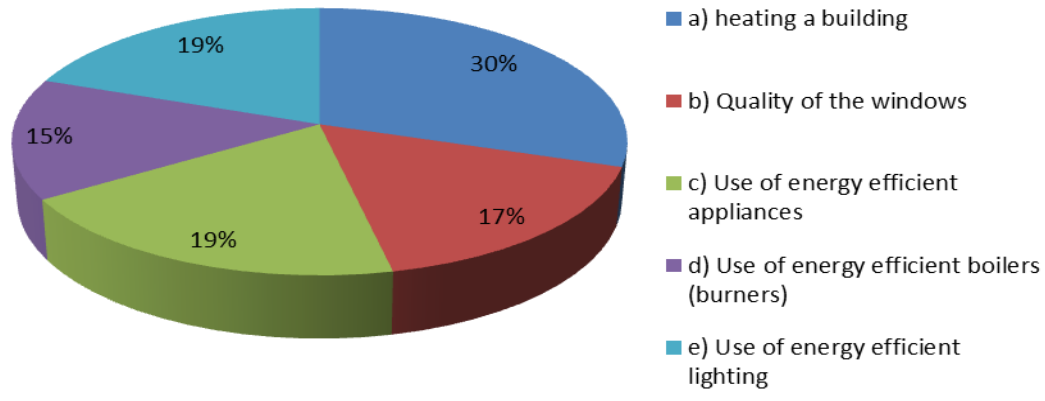
Question №4:

Is the theme of energy efficiency linked to environmental protection?



Question №5:

Grade following energy efficiency measures and their effect on energy saving (6 - maximum 1 - the least))



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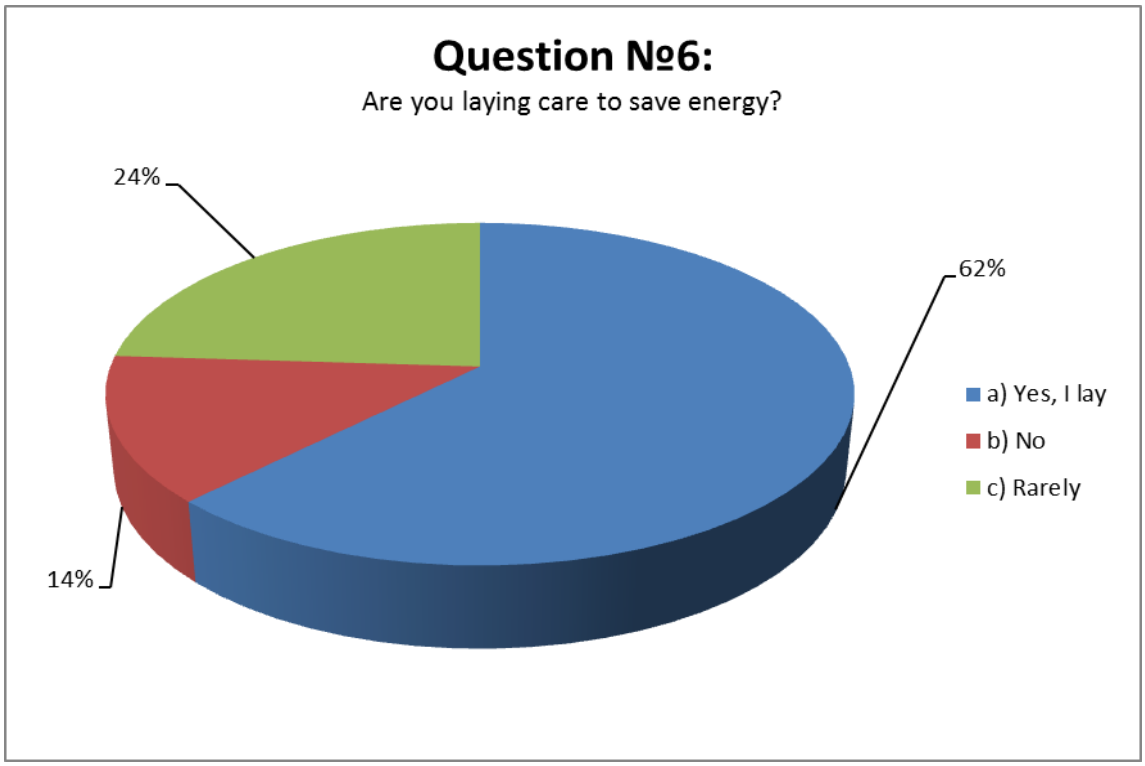

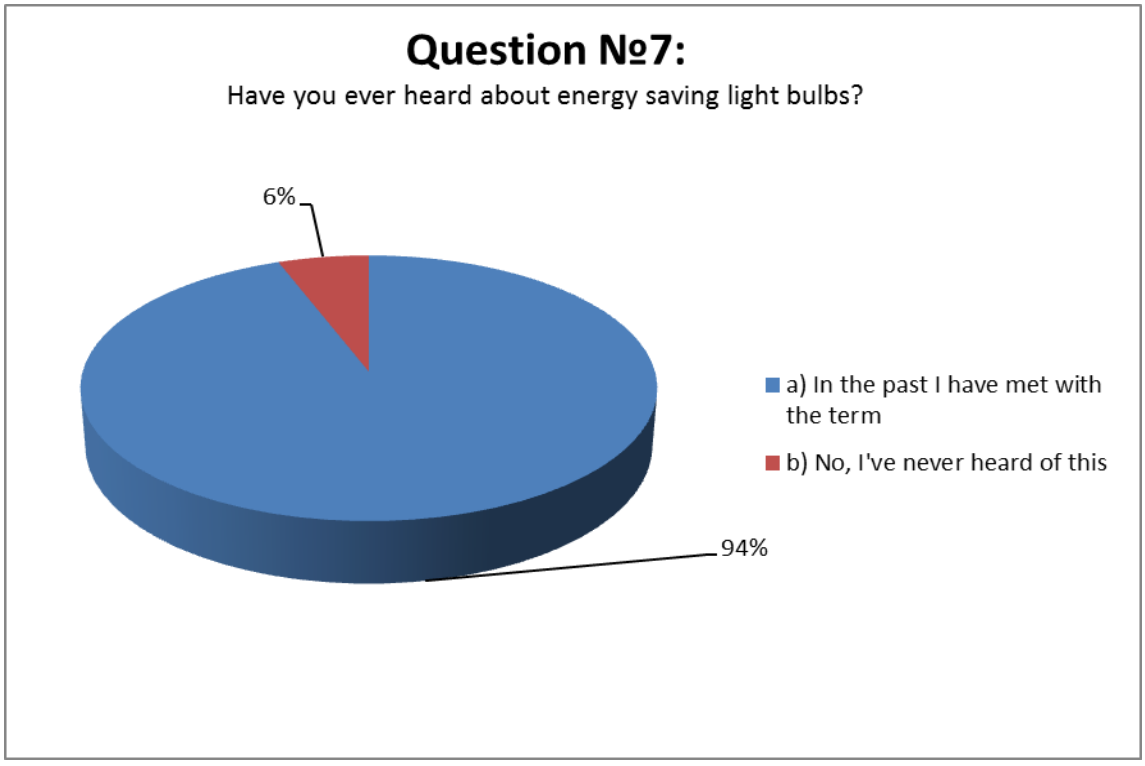

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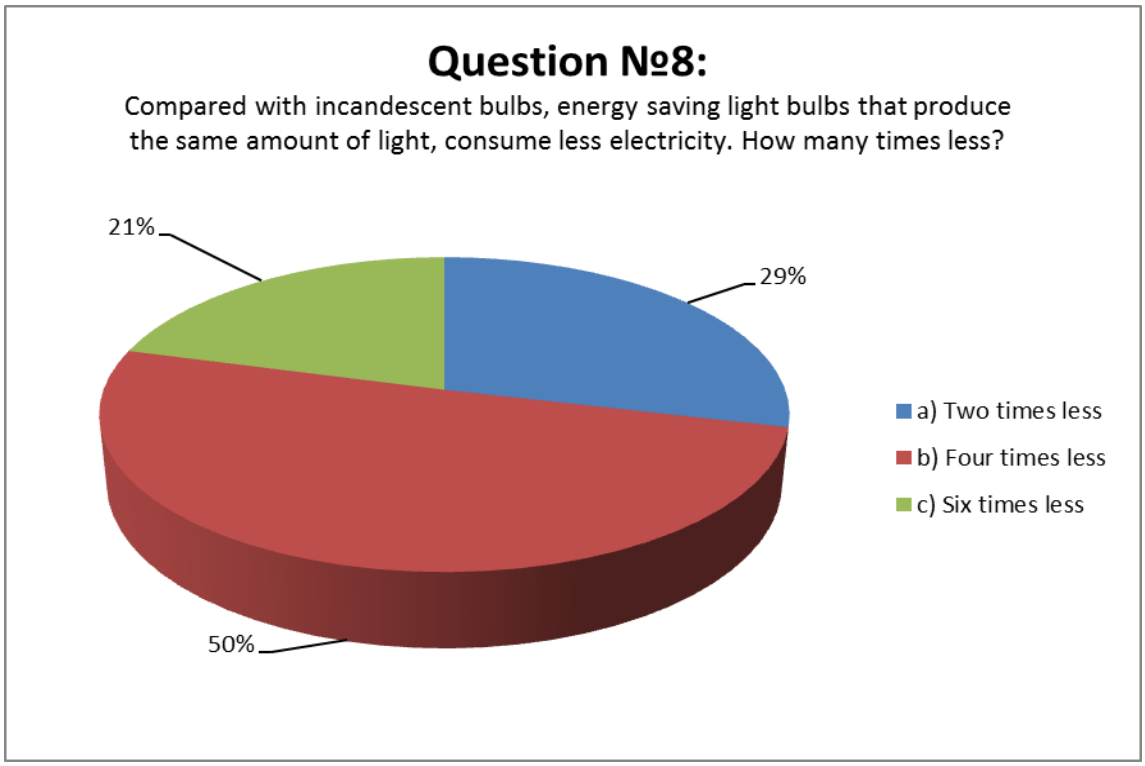

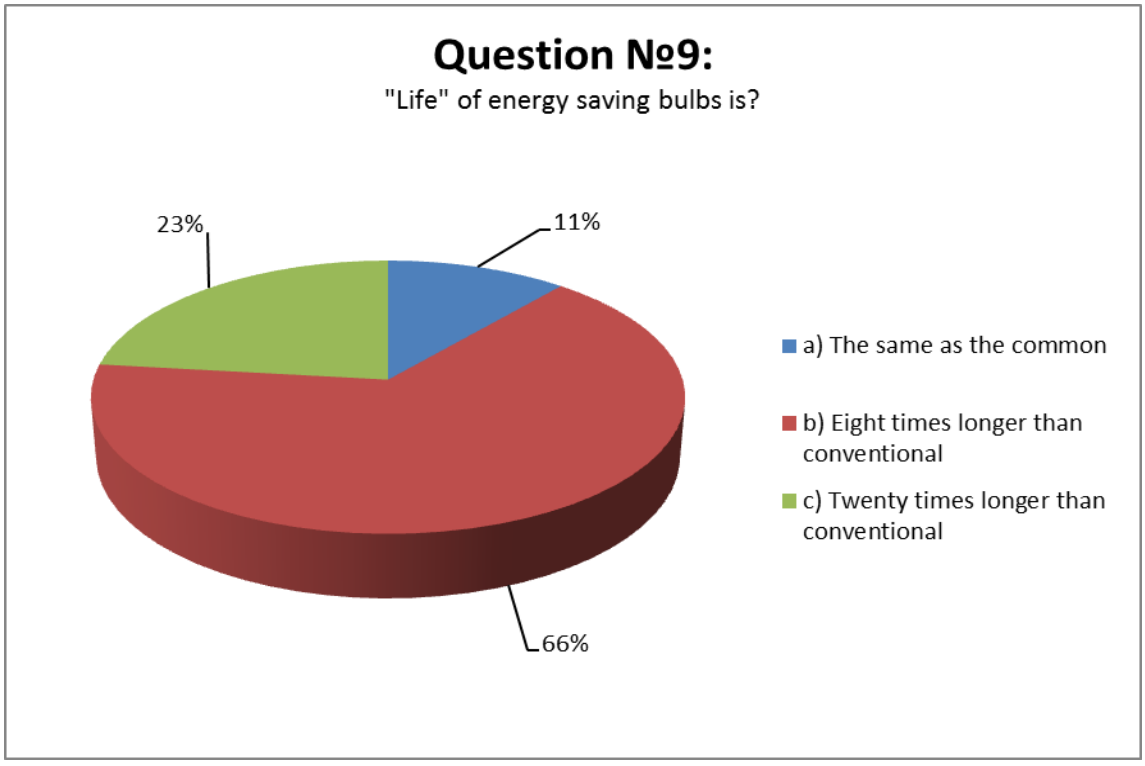

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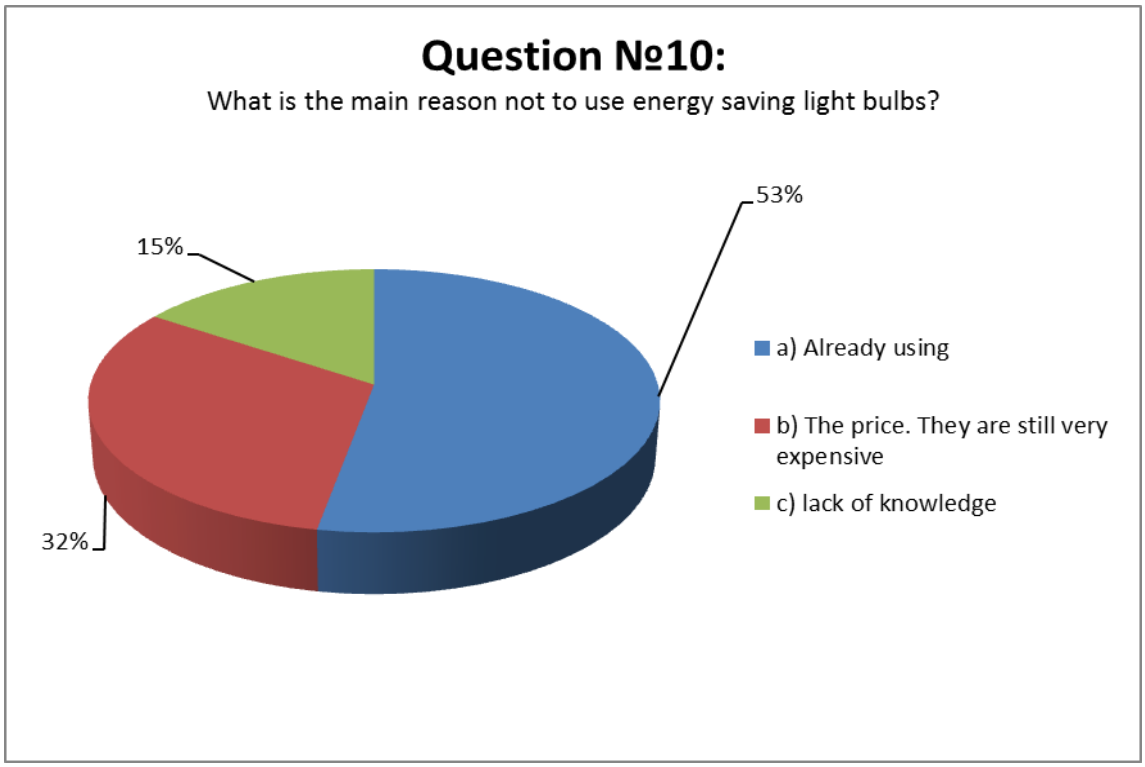

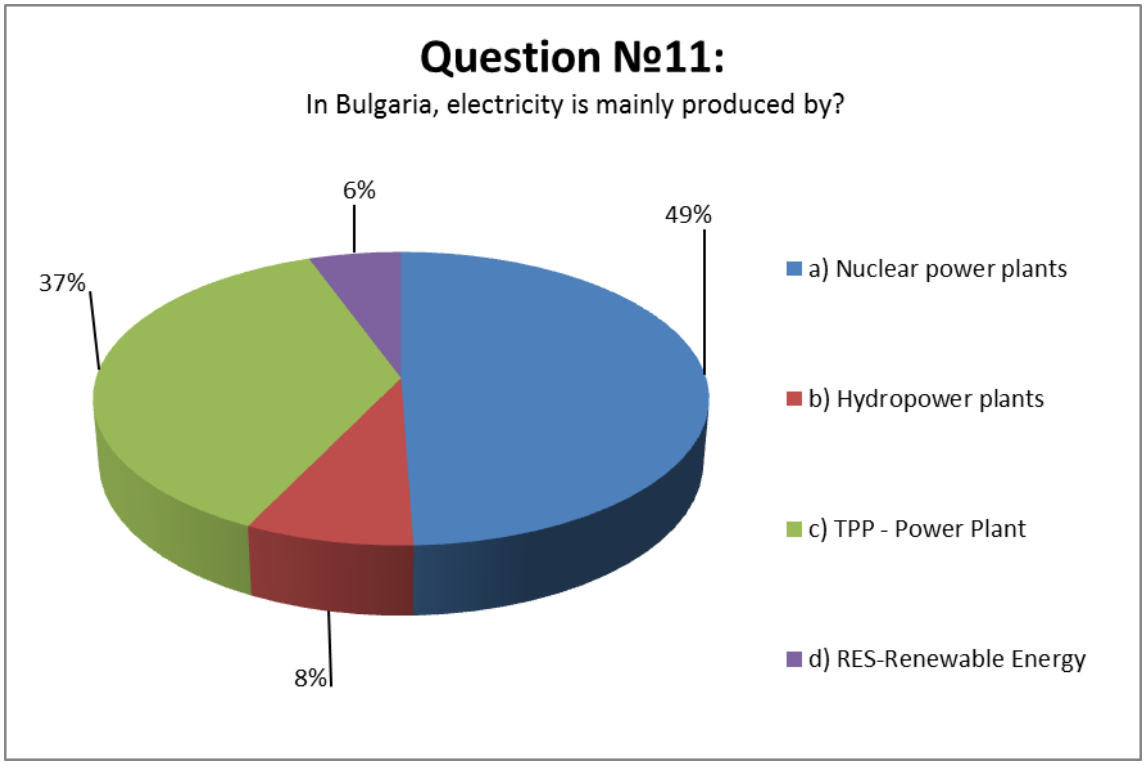

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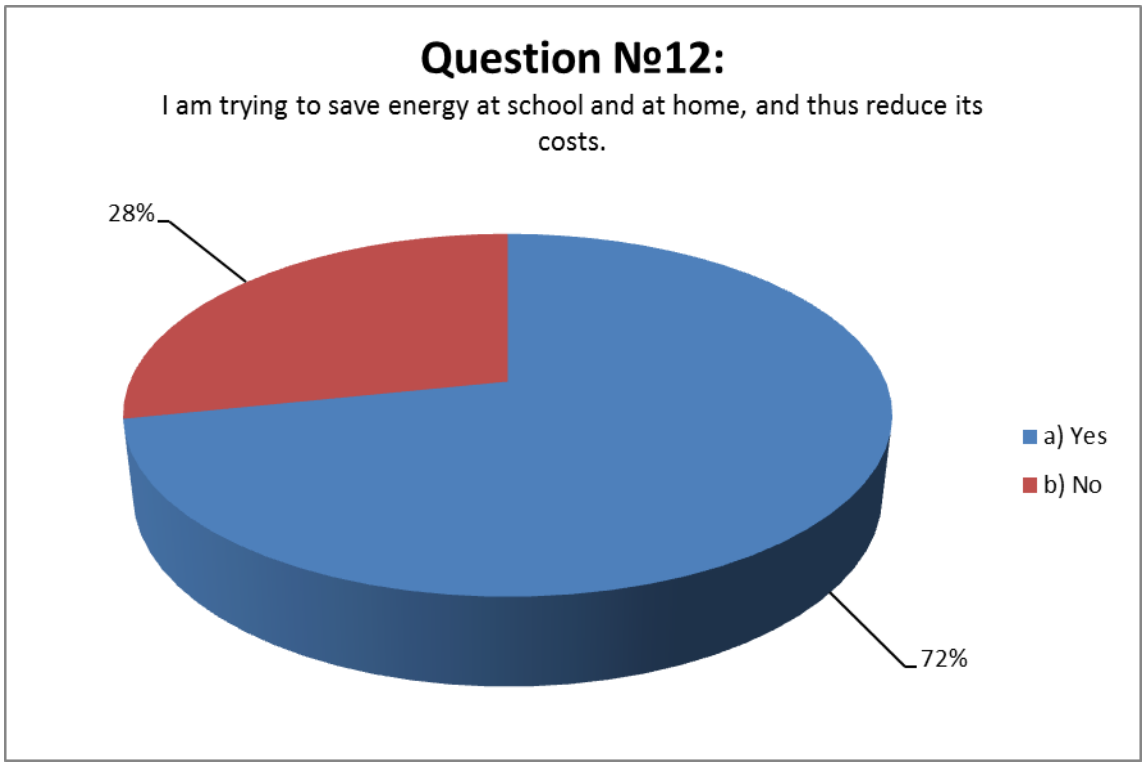

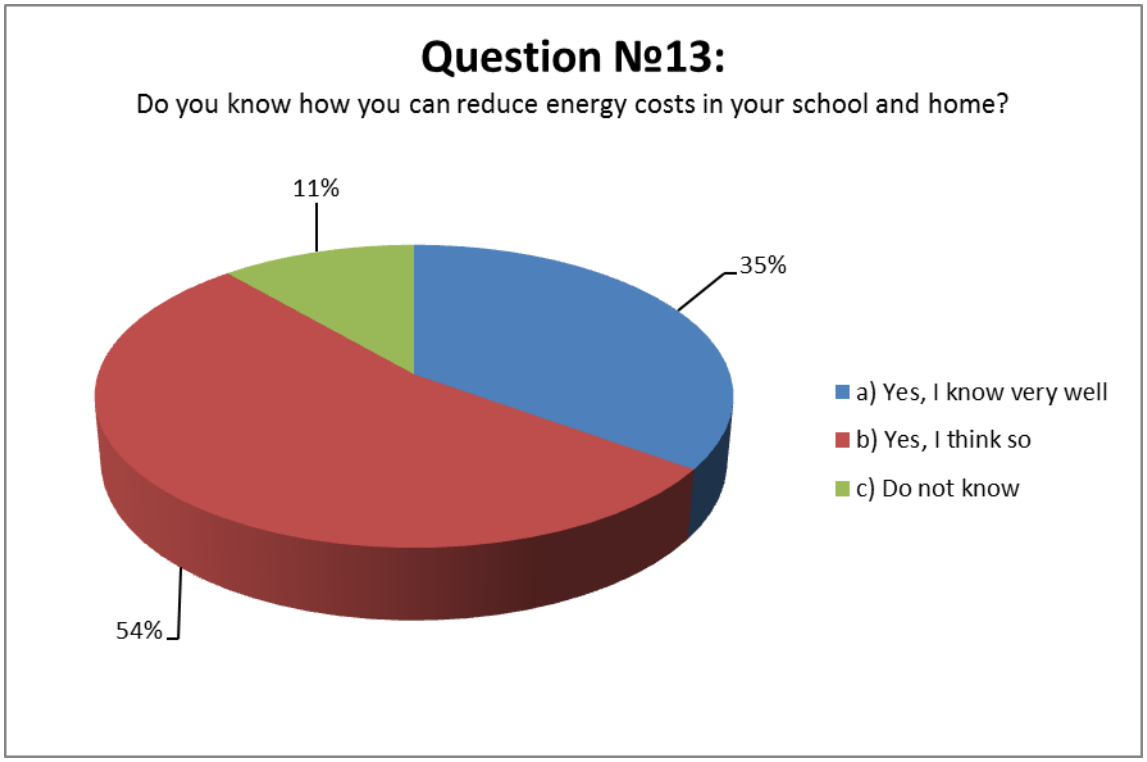

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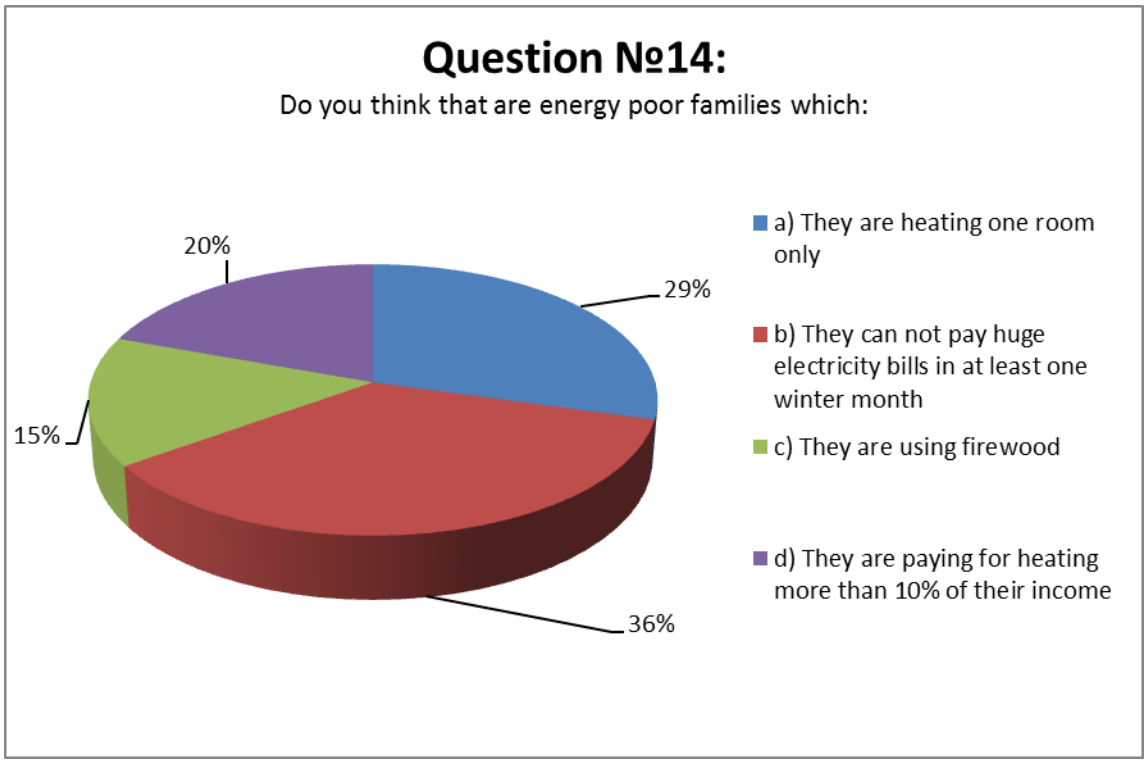

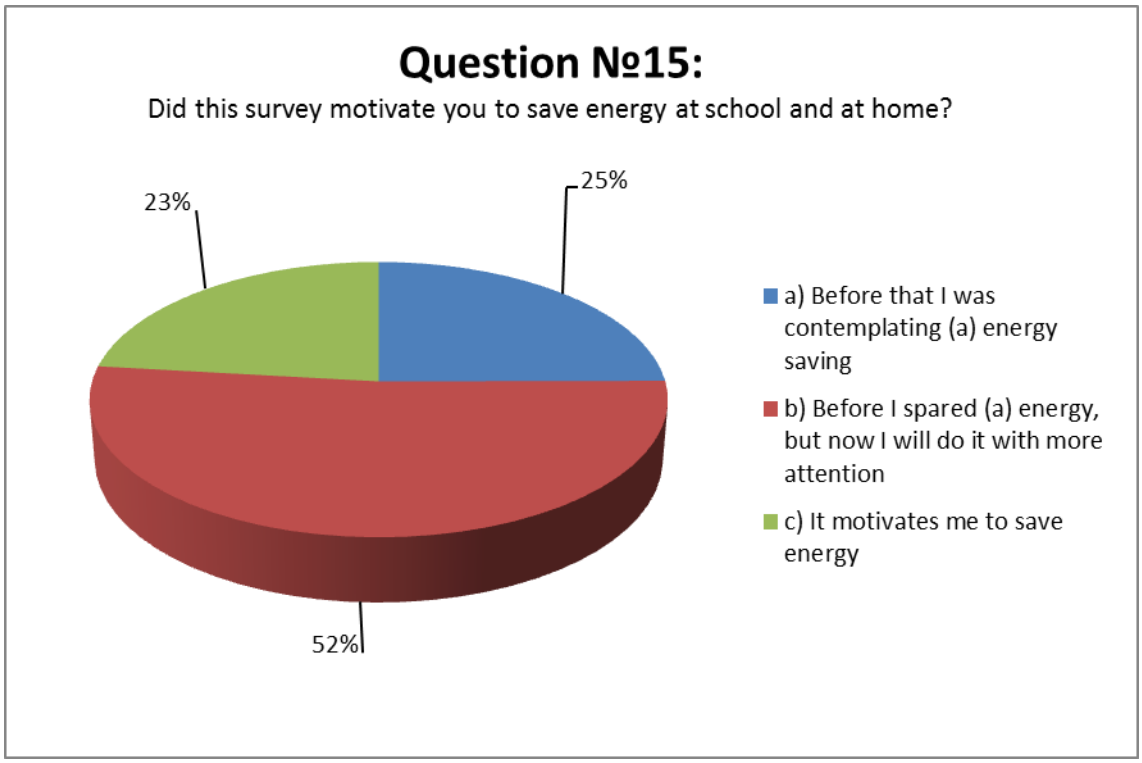

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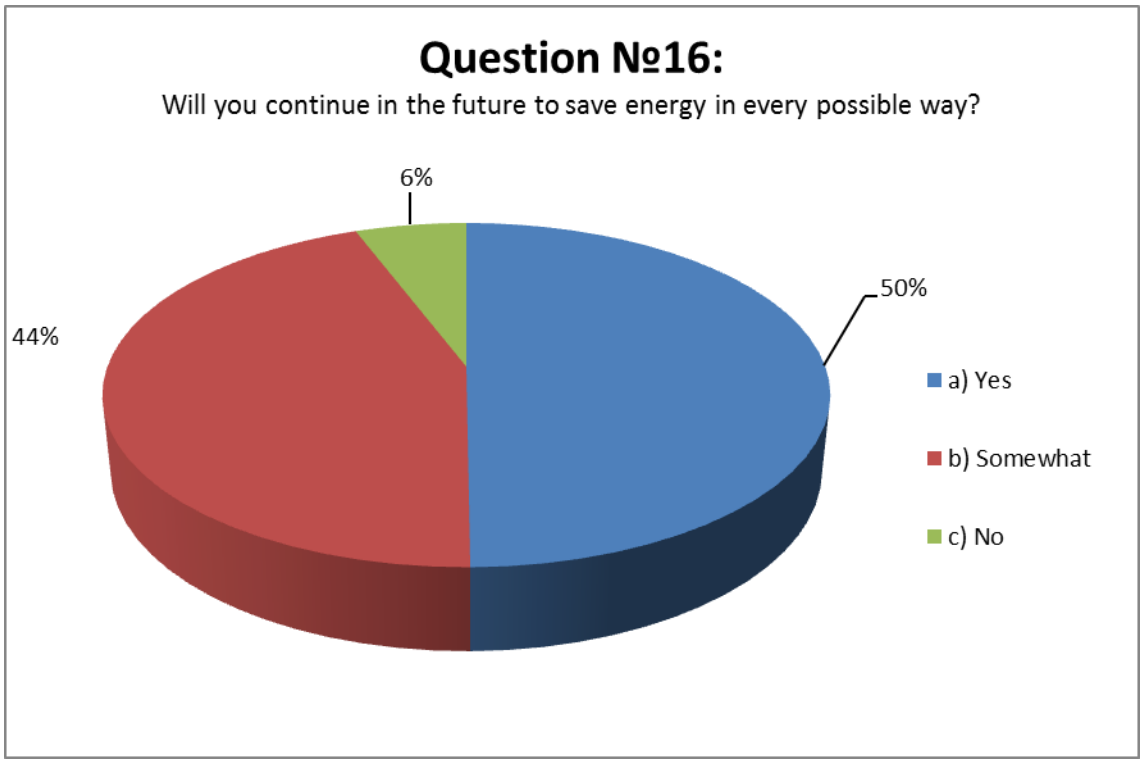

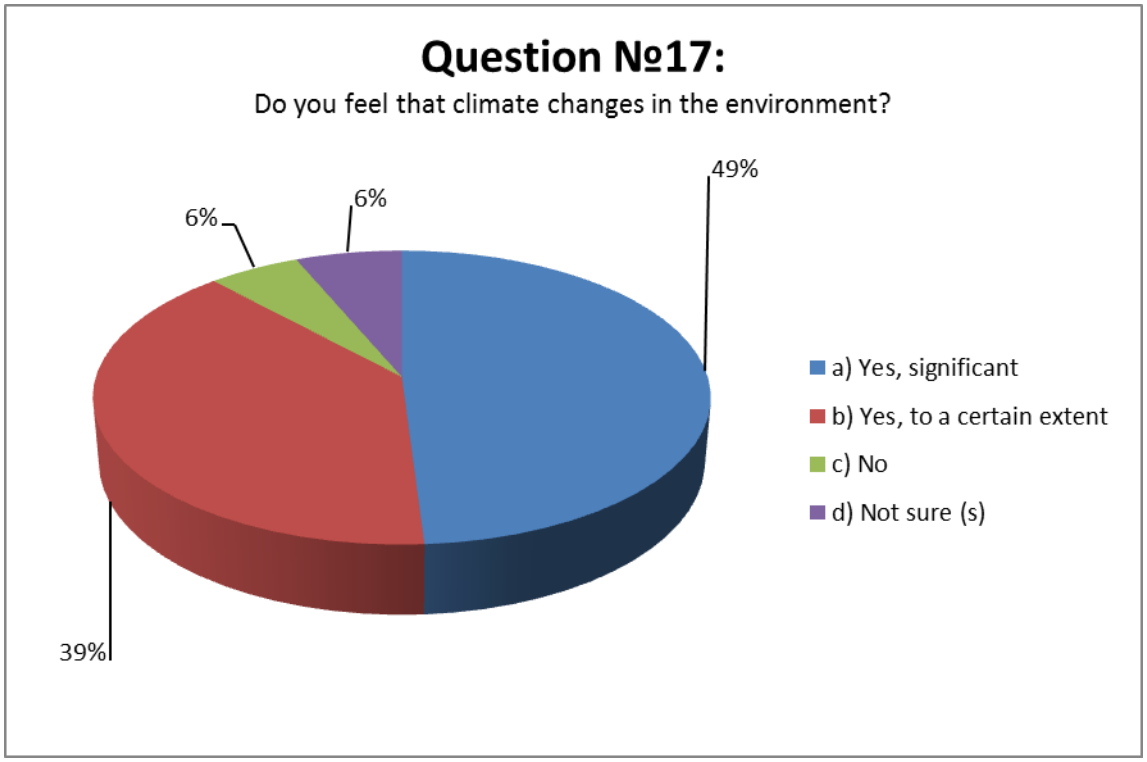

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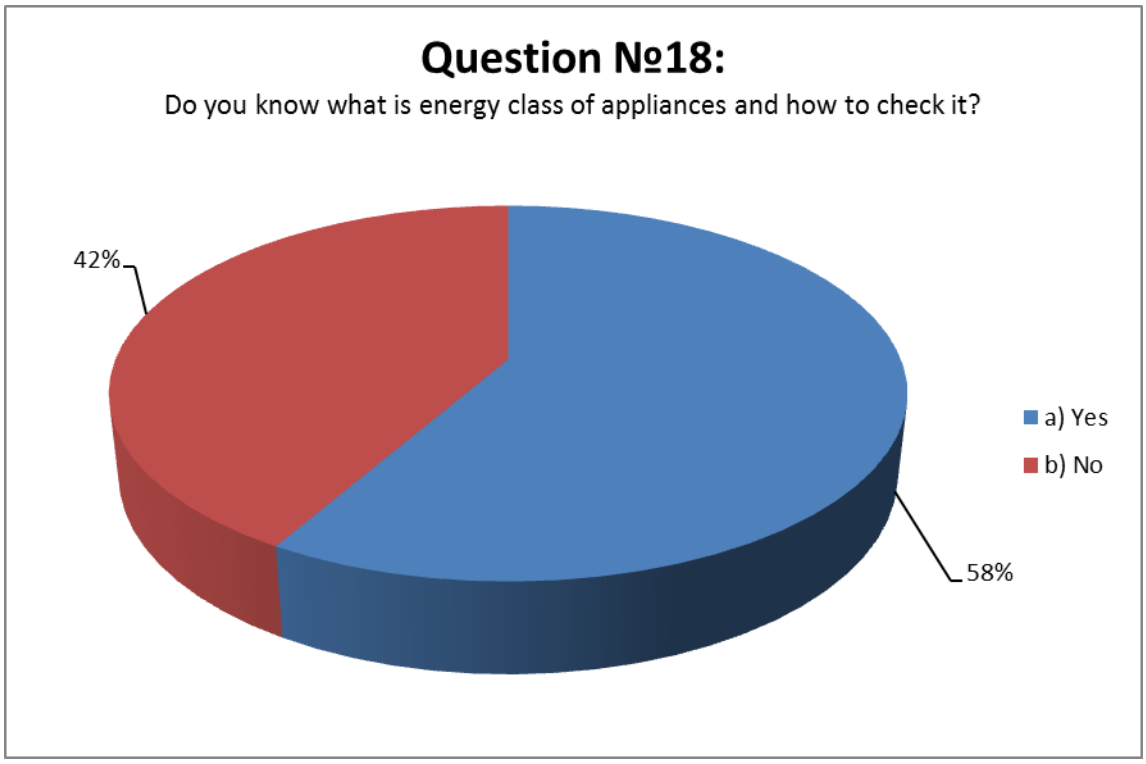

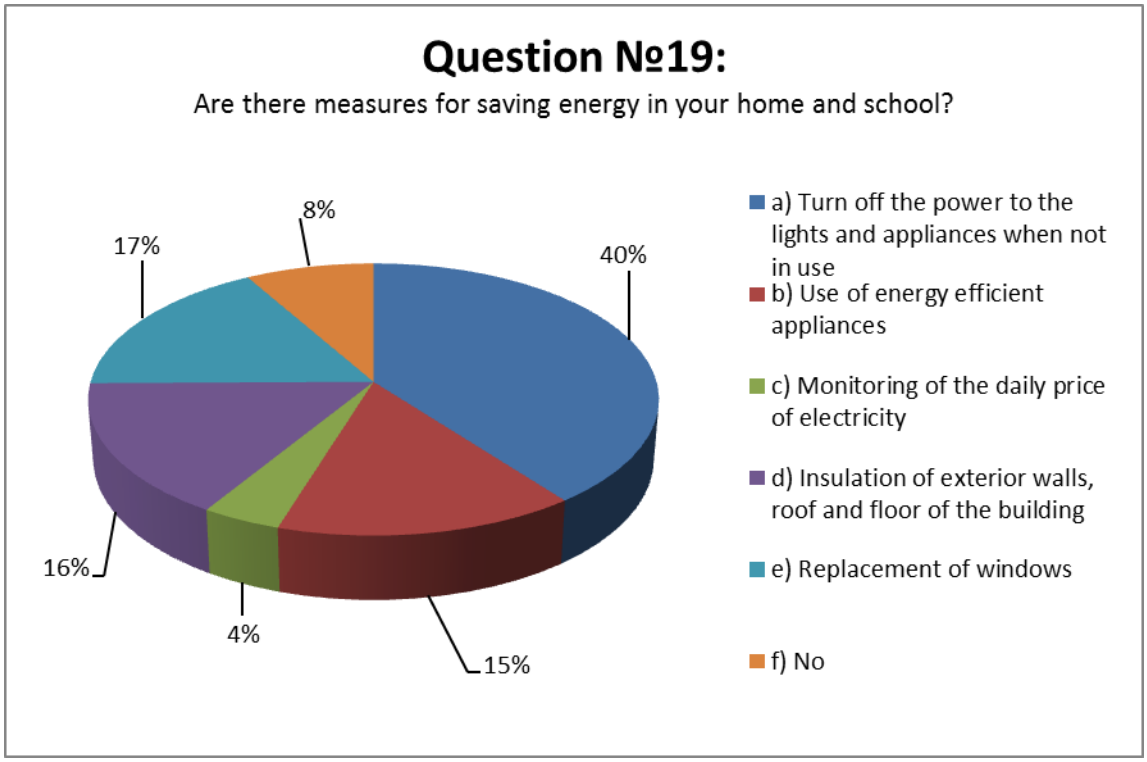

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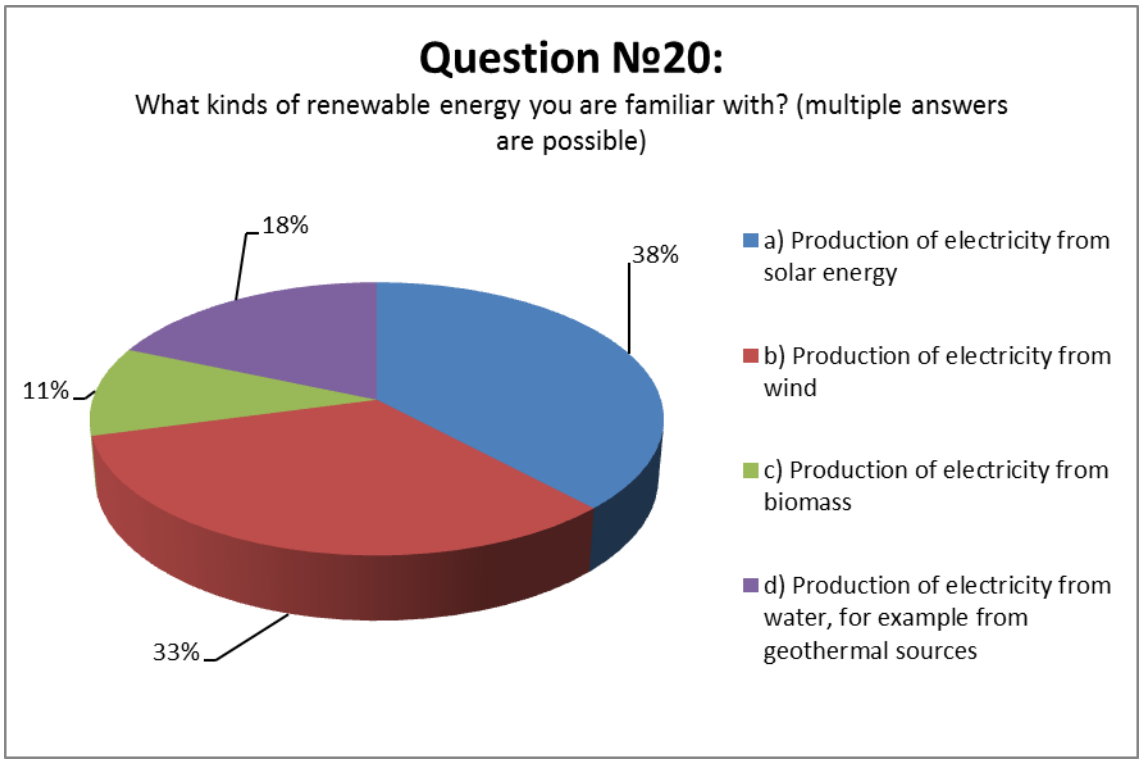

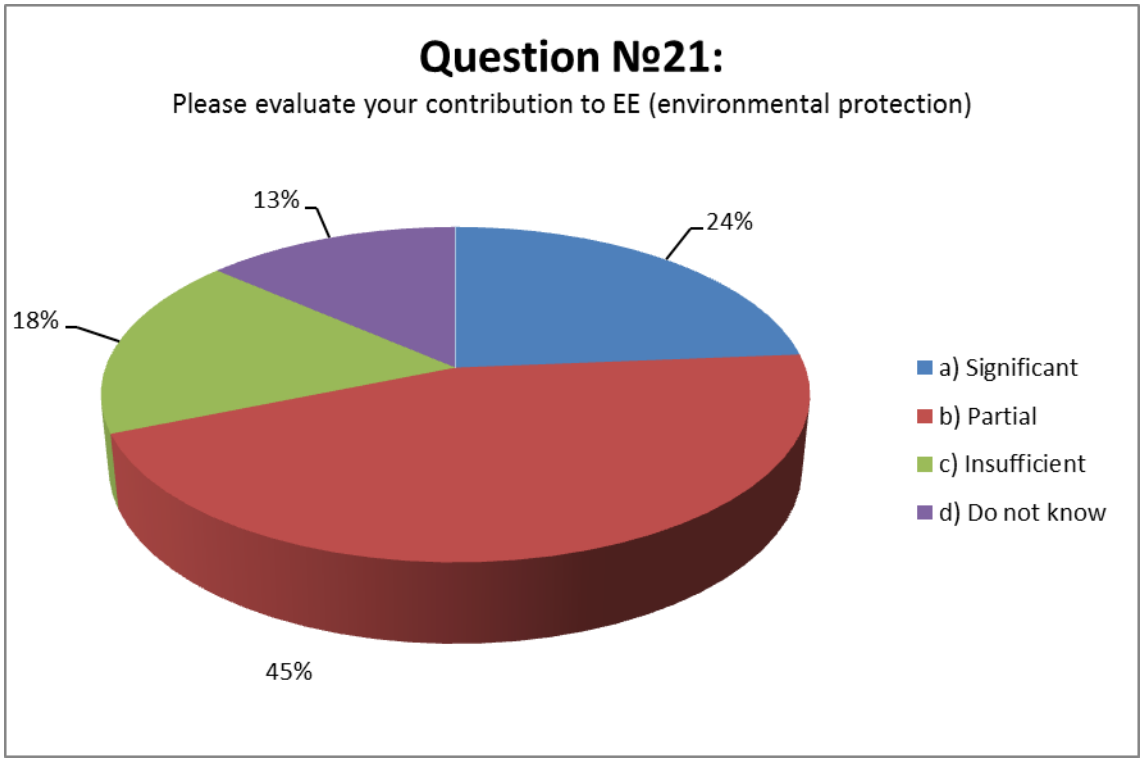

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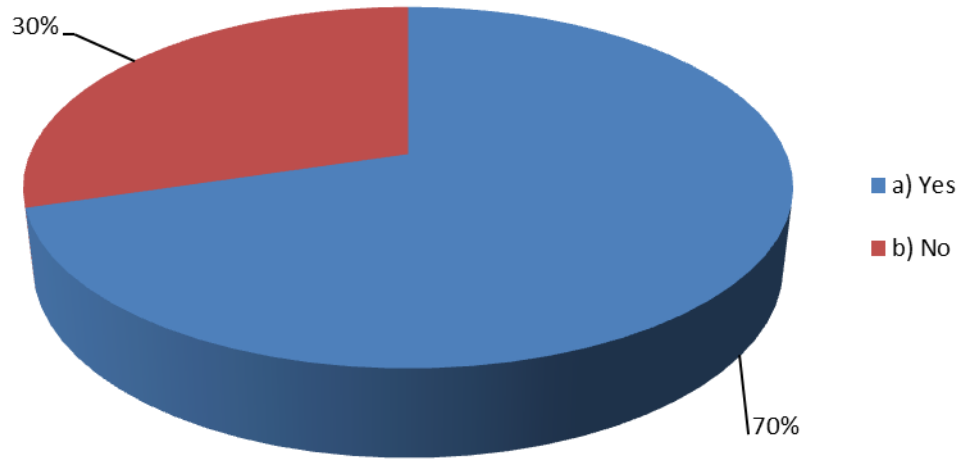
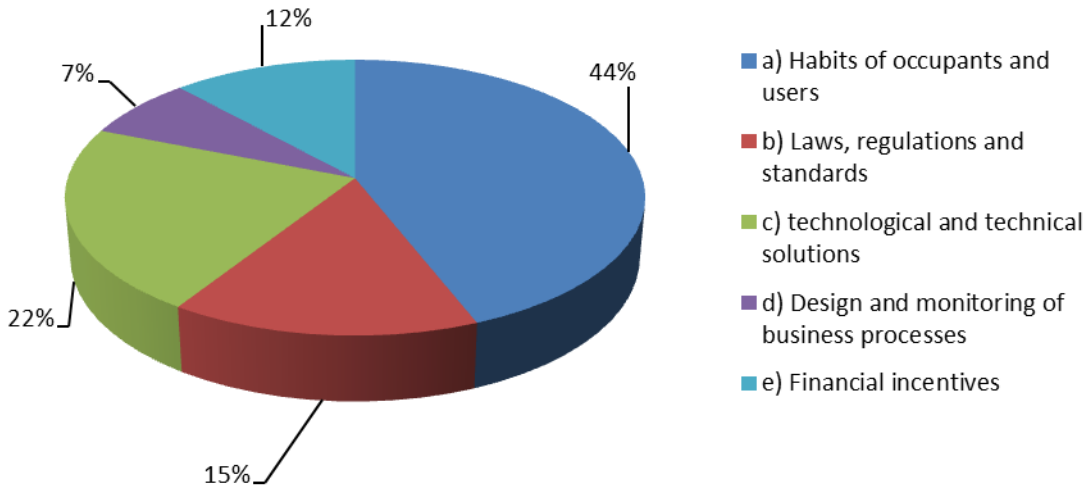
Question №22:

I am satisfied with the terms of the heating and ventilation system in my school.



Question №23:

According to you, which of the following factors have the greatest impact on energy efficiency?



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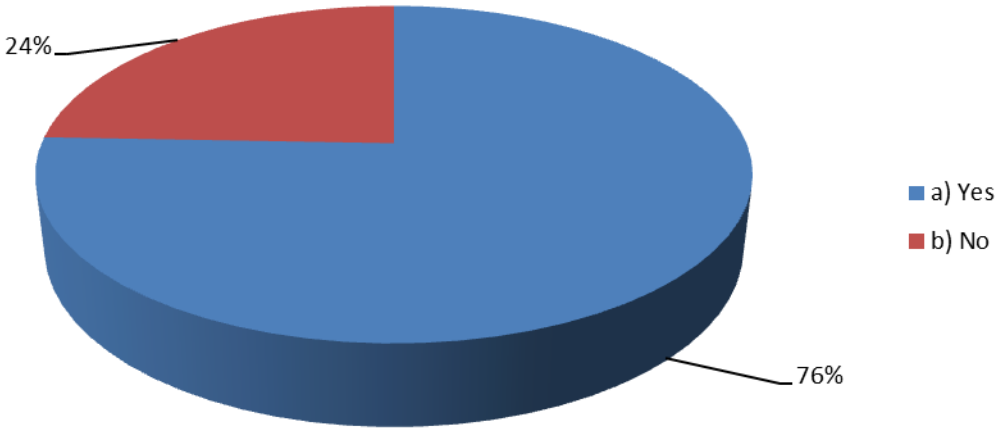
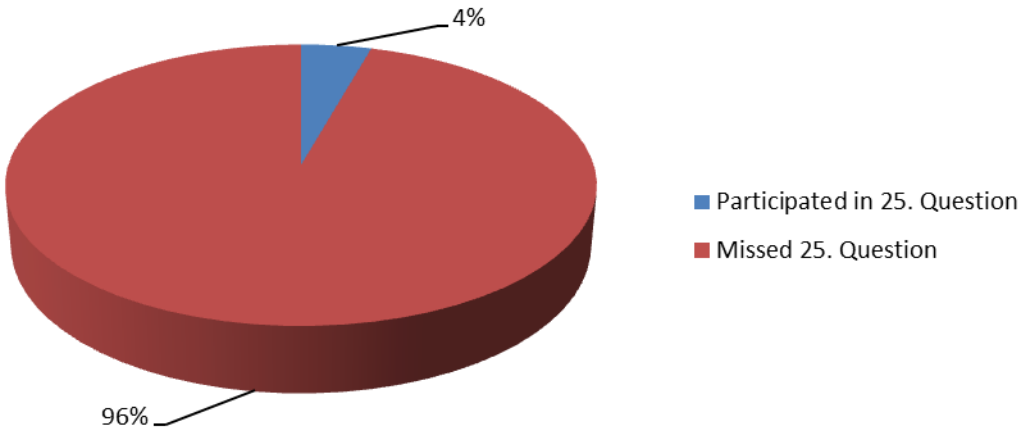
Question №24:

Would you participated in a campaign to save energy and money to invest in equipment for the renovation of the buildings or the introduction of new technologies in your school?



Question №25:

Please if you have any other comments that are not covered in the survey to add them!



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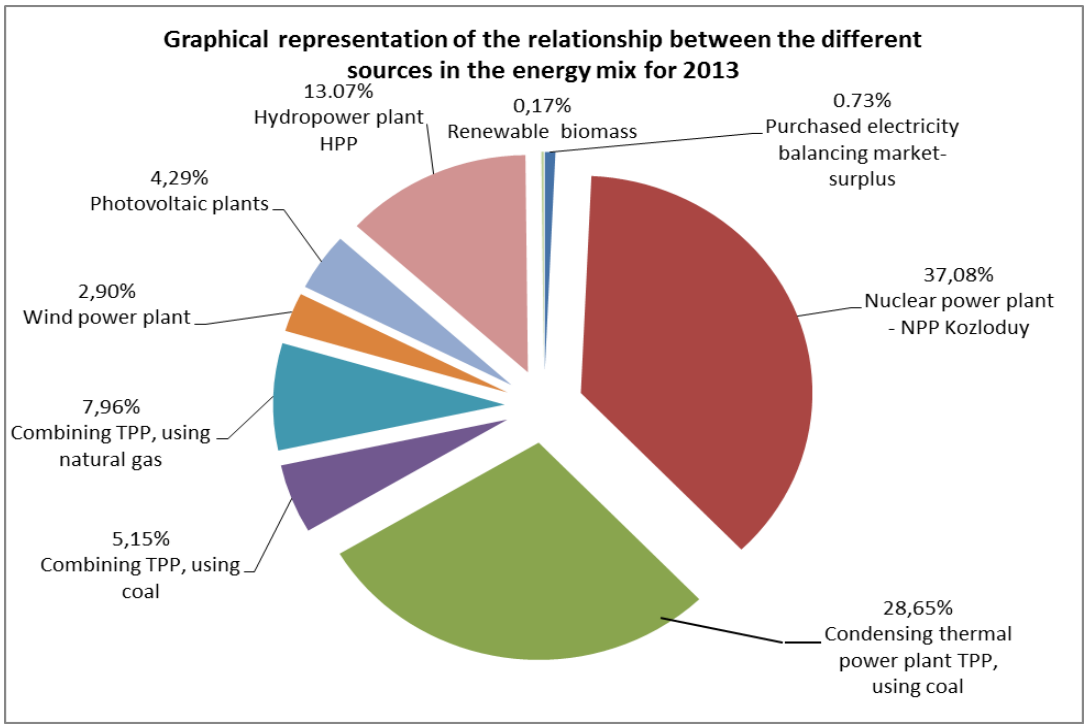
In support of the answers that the students of primary and secondary education in the school year 2013/2014 municipal and state schools in the Municipality of Pernik, took part in an anonymous survey conducted in connection with the question №11: "In Bulgaria, electricity is obtained from the Nuclear power plant /NPP/, Hydropower plant /HPP/, Thermal power plants /TPP/, Renewable energy sources /RES/?" presenting a graphical representation of the relative share of each energy source to the total amount of electricity sold by the public supplier "National Electricity Company" EAD "CEZ Electro Bulgaria" AD to 2013, according to data provided by the "CEZ Electro Bulgaria" AD:



II. CONCLUSION

Main objective of the project is Europe's children to get acquainted with the problems of global warming and the efficient use of energy, with the judicious use of finite energy sources, with different options for energy production from renewable energy sources / RES / to understand their role and contribution to the protection of our environment and thereby creating a sustainable future for the planet.

Creation of a favorable and stable environment for raising, training and education of children and students are the main priority of Pernik Municipality.

Despite the difficulties in the financial crisis, Pernik Municipality takes great care and effort and work for:

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• construction of a modern material - technical basis in schools;

• Access to each child and student to quality information - communication technologies;

• new playgrounds ;

• equal access to quality education;

• linking the disciplines and professions with the labor market and economic development;

• knowledge / awareness of children regarding environmental, energy and economic benefits of implementing energy efficiency measures in buildings of schools - ie their attitude towards rational use of energy , the environment and their contribution to the welfare of the region - Pernik Municipality.

Currently in Pernik , according to the Ministry of Education operate 22 public schools, six public vocational schools, a state special subsidiary school / children with mental retardation / and a public service unit - a group of resource support. The number of students according to data from the official website of Pernik Municipality for the academic year 2010 - 2011 municipal schools is 6865, divided into 334 classes, and in vocational schools is 2209 .

This distribution of the school system in Pernik municipality currently meet the needs and requirements of children and students for education.

Professional schools of the Municipality of Pernik to professions that offer provide young people's needs for education and implementation and are associated primarily with the development of the local economy. These are architecture and construction; interior design and interior; computer-aided design; ecology; management and finance; Tourism and Hospitality.

In the training of students can use different forms - conducting traditional lessons, lectures, discussions, research, organization of joint events with other classes or schools.

Training for energy efficiency in school will show the students the basic principles of energy efficiency and will allow for saving energy in their everyday lives.

Younger students (up to 9 - 10 years) still cannot understand the physical sense of energy. Therefore, the issues related to energy and energy efficiency should be considered in practical terms with younger students, the position of the child and the world around him. Most attractive and effective form of training for this age is the game. Happy children compose and discuss stories about energy. Effective exercises are those where children can do something with their hands: to color of drawing books related to energy, to make applications to assemble different models.

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Older students (10-14 years) with interest perform tasks that allow them to increase their status in the class and school: by working in the school patrol, monitor water consumption on and off the lights. In their ability to explore energy use and saving of resources and energy in their school, home, and explore heat loss in buildings. This work is interesting for children prone to communication and active practical work. Students of this age also gladly deal with different art on the theme of the project - draw, make models, compose stories, participate in contests.

In working with high school students (14-19 years) the best results are achieved when the tasks coincide with their plans to further their education, or public activity. Older students tend to research, can fully exercise the research work related to energy and energy efficiency, through their tasks explore certain methods and discuss the results. Such work can be published, the author can participate in conferences or seminars, including the university, which wants to apply. High school students can try in collaboration with journalistic and publishing e looking for a platform for dissemination of their findings. Particularly interesting for older students are playing with the participation of experts in the field of energy, energy efficiency and energy saving, which play the role of government officials, academia, business, the press, public organizations. Through interaction with older players, the students look and try to implement their ideas for improving energy efficiency and environmental protection in their area.

For students from secondary and postsecondary education are interesting the tour routes in environmental pathways explaining the relationship between energy, energy saving and environmental protection, excursions to energy companies, the study of the sources of supply of electricity and heat in their city and region.

Besides theoretical problems students can actively participate in practical work, to show initiative , make your choice and make decisions .

Practical activities must be oriented towards solving the current daily issues. Children actually need to see the link between theory and life. Training is needed to stimulate their imagination and allows for independent thinking.

Namely practical activities best and most effectively organize and rally the students. Practical problems associated with energy savings could be :

1. Monitoring and measuring energy consumption at school and at home.

2 . Compilation of energy passport of the school.

3 . Growing plants for biofuel in school and at home.

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4 . Evaluation of energy consumption and an optimum diet according to energy values.

5 . Research based on the results of the excursions to energy facilities.

6 . Identification and study of the causes of energy loss in school, at home.

7 . Use of natural resources in the past, nowadays , forward .

8 . Playing detective (eg , investigating the loss of energy production and transportation of food, or the path of acquisition and transformation of energy that is used to turn on the lamp in the class) .

The aim is to implement simple energy saving measures at school and at home.

Very important for the confidence of children and expand their activities are disseminating its results both in their school and beyond. This could be done by:

- invite parents to meet and talk about their work , especially that associated with domestic savings, with possible cost -saving on the family budget. This can be done in general PTA meeting of the school;

- Invite other students from neighboring classes from other schools meeting, school seminar or conference and talk about their experiences;

- Hang posters or make an exhibition of drawings at the school;

- Issue its own newspaper, brochures or flyers and distribute them to students and parents in your neighborhood, etc;

- Interact with representatives of local government and politicians, invite them to a meeting at the school where they can share their experiences and to ask questions or send letters to the authorities or flyers;

- Interact with the experts and ask them for the local energy situation;

- Find public organizations working in the field of energy and environment and have the opportunity to understand more about their work, to cooperate;

- Interact with journalists, giving them their themes and outcomes of publications;

- Invited the press to their trips to "hot spots" of energy losses, etc.

Besides students, when talking about energy efficiency must be included and their parents, older relatives, family members, neighbors, and others. To be included in the measurement of energy consumption in the home, discuss the results, looking for a way -saving heating and electricity . Children share with adults the knowledge obtained in school: how to store heat in the house, how to better insulated windows and doors, how to save electricity. When the students feel their importance in the family and the importance of the information they received.

Particular attention should be paid to the role of transport in terms of energy efficiency in schools.

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Going to school by bus , driving to the store, visit relatives , travel during the holidays , and any action , which is moving or moving an object from one place to another , require the use of transport, respectively, consume energy . Not only large trucks or ships that supply us with goods , but daily traffic by cars, buses , trains and airplanes also has a major impact on energy consumption and hence the environment. Transport and in particular individual transport is not only consumer of energy, the source of emissions and noise, but also requires space for parking.

Here students could seek information about how the problem is solved transport in other countries , how could they move so as to save fuel and have less harmful emissions into the atmosphere (public transport, bicycle, inline skates , school buses that can carry more children with a vehicle , etc.) Any ideas students need to be heard, discussed, to encourage those with great practical value. For children it is important to recognize the importance of their work.

Energy efficiency is a very important topic. We need to change people's thinking, and that is extremely challenging. And since the future of the world's children is especially important to understand the problem, ie to start with the smallest. In Bulgarian school children should be trained in energy efficiency now more than ever to raise awareness and knowledge in order to achieve real change in the use of energy. During their studies, students should acquire knowledge that will not only affect their current and future lifestyles, but also to influence the behavior of their families and the elderly in general. The impact on children is the surest way to achieve immediate and lasting changes in their behavior related to attitudes to energy and the environment.

Prepared the report from the study and report detailed analysis of the energy consumption among elementary and secondary schools in the Municipality of Pernik and conducted an anonymous survey after students in primary and secondary schools in the Municipality of Pernik to their level of knowledge on the topic of energy efficiency school and at home, and for environmental protection **team "GRN POWER BULGARIA" Ltd.:**

1. **Dipl. Mag. Eng. Vyara Zlateva** – Manager, Expert Building Structures
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