

OTBL's CSR Initiative 2018-19

Protectors of the Environment – Phase III

Adopting Energy Efficient Choices for Sustainability

--From Awareness to Skill Development

'Protectors of the Environment (PoE)' – a CSR initiative of ONGC TERI Biotech Limited (OTBL), which is aimed at creating awareness on environmental issues among school students and influencing behavioural changes in them with sustainable practices completed Phase III of its programme in Ahmedabad, Bharuch, and Mehsana. The programme focused on sensitizing students on how to adopt energy-efficient ways to sustain renewable energy. For the awareness on energy efficiency and conservation, 18 schools from Ahmedabad, Mehsana, and Bharuch were selected. The target group had a mix of urban and rural locations which were divided into 4 urban and 2 rural locations in each city. A total of 2800 students, 54 teachers and 21,600 members of household and neighbourhoods were able to benefit from the programme.

Programme Approach

An effective and a one-of-a-kind outreach programme towards realizing SDG 7 – “ensure access to affordable, reliable, sustainable, and modern energy for all”, PoE has been working tirelessly in its endeavour to empower school children about necessary actions to achieve environment sustainability through energy conservation. The concept focused upon providing theoretical understanding of energy consumption, importance of energy conservation, calculating energy usage and strategizing energy conservation strategies for schools and households. After the identification of schools, selection of nodal teachers, the implementation of the phase III was carried out through different workshops.

Introductory workshops in schools

Ever since its inception in 2017, PoE has been engaging school students and local communities in Gujarat towards various environmental initiatives to ensure a sustainable future. In Phase III, dynamic interactive discussions, workshops, energy audits, quiz contest, and a unique world café were held that helped young learners to realistically engage with challenges at hand, and work towards ground level social transformation. Various types of resource material used in the workshops were – power point presentation, knowledge pack in the form of a book titled **Save Energy to Save Future**, Teachers' Module, and Pre-Assessment questionnaires. The students were addressed on the theme of 'Energy Conservation and Efficiency', and subject experts and academicians engaged with students to understand their level of understanding energy-related concepts. Selected nodal teachers were also briefed about the energy audit with the help of a holistic Teachers' Module.



Students with their copy of the resource book, Save Energy to Save Future

• Harnessing alternate energy sources that are inexhaustible or renewable and non-polluting. For example, solar, wind, biogas, and hydropower. Therefore, it becomes quite necessary to create awareness about inexhaustible and non-polluting energy sources amongst the masses and students.

• Using energy efficiently, thereby reducing the adverse environmental impact, while at the same time making renewable energy resources last longer. Students should be provided with knowledge and skills needed to use energy efficiently. A practical approach is to promote energy management in schools as a rational and logical component of the energy education course.

Adopting (Renewable Energy)
The most effective way to reduce pollution and fight climate change is to use renewable sources of energy instead of fossil fuels. The energy from sun, wind, biomass, and other renewable sources is more sustainable and will not get exhausted. Renewable or non-conventional sources of energy not only cause less emission but are also available locally. Their use can significantly reduce chemical, air, water, radioactive, and thermal pollution. The use of renewable sources of energy leads to reduction of greenhouse gases (GHGs) during energy consumption, thus making our planet safe and healthy for its inhabitants.

The Government of India is leaving no stone unturned to adopt renewable energy technologies for the betterment of the country. You will be proud to know as an Indian citizen that the year 2018-19 saw India progressing quite well towards fulfilling its renewable energy targets.

Energy meter!

By March 31, 2019, India attained global 4th and 5th positions in wind and solar power installed capacities, respectively. India is now at 5th global position for overall installed renewable energy capacity (Source: pib.nic.in)



Reducing Energy Use and Conservation
There is a direct correlation between your energy use and the environment. When you consume less power, you reduce the amount of toxic gases released by power plants, conserve the Earth's natural resources, and protect ecosystems from devastation. By taking measures to reduce your energy use, you'll contribute to the



save energy to save future

health and well-being of the world. Energy conservation refers to efforts made to reduce energy consumption. This can be achieved either by using energy more efficiently or by reducing the amount of service used (for example, by avoiding unnecessary driving of cars). Conservation is the process of reducing energy use by going without an energy-expensive service. Energy conservation reduces the need for energy services and results in increased quality of the environment, national energy security, and higher personal savings. It also lowers energy costs by preventing future resource depletion.

Energy can be conserved by reducing waste and losses, improving efficiency through technological upgrades, and improved operation and maintenance. On a global level, energy use can also be reduced by achieving a balance in population growth so that the resources could be utilized optimally.



Enhancing Efficiency
While energy efficiency and energy conservation are often used interchangeably, there is a small but significant difference between these two energy-saving practices. For example, you can improve energy efficiency by selling or exchanging your old washing machine for a new energy star certified washing machine. This new machine would still consume electricity to wash and dry your clothes, but it would use much less energy to get the same end result. On the other hand, you can conserve energy by leaving your washed clothes to dry outside using sunlight. This form of conservation cuts energy consumption out of the drying process completely.



What Can Be Done At Personal Level?
To reduce energy consumption in your home, you do not necessarily always have to go out and purchase energy-efficient products. We just need to make certain behavioural adjustments that have the highest potential for utility savings.



save energy to save future

Energy Audit at Home

Name: _____

Class: _____

Section: _____

School Name: _____

It is important to keep a close watch on the amount of energy you are consuming. Complete the below sheet to find out how much energy you are using and then think of ways to save electricity.

Name of the energy appliance	Capacity (in Watts) (a)	Total number of fixtures (b)	Number of operating hours in a day (c)	Consumption in a day [(a x b x c)/1000] (kWh) (d)	Consumption in a month (d x number of days the appliance is used in a month) (e)
Ceiling fan					
Cooler/Air Conditioner (AC)					
Table fan					
Refrigerator					
Incandescent bulb					
Tube light					
LED bulb					
Geyser					
Television					
Computer system					
Iron					
Washing machine					
Total units consumed per month					

Instructions:
You can also ask your teacher or check online about the power consumption (in Watts) of different electrical appliances. It will help you to fill the above energy audit sheet more accurately.



PRE- ASSESSMENT
FOR
SAVE ENERGY TO SAVE FUTURE

Personal information

Name:

School:

Class:

Gender:

(Ques1) Energy can neither be created nor be destroyed; it can only change its form. The forms of energy are:

(a) Chemical, Electrical and Thermal

(b) Mechanical, Electrical, Thermal, Radiant, Mechanical and Nuclear

(c) Mechanical and Radiant

(d) None of the above

(Ques2) _____ refers to the development that meets the needs of the present, without compromising the ability of the future generation to meet their own needs.

(a) Sustainable development

(b) Fossil fuels

(c) Electric energy

(d) Gravitational energy

(Ques3) _____ is the commonly used by scientists around the world as the unit of energy

(a) Joule (J)

(b) Kilojoule (kJ)

(c) Both 'a' and 'b'

Excerpt from the resource book, energy audit and the pre-assessment form

Engagement workshops

Environmental justice and sustainability can be achieved only when we empower our children by leading them on a path to understand the massive potential in energy conservation to envision a sustainable future. In Phase III, satisfaction among teachers and principal towards this project was strengthened through various interactive workshops and energy café sessions. Students engaged with their families, neighbourhood and local communities through poster-making, placards, flowcharts on daily energy use, exchange of stories and experiences to spread the word of a sustainable society through adopting energy-efficient ways for ecological sustenance. Feedback from students, teachers, and principals of the participating schools was encouraging. The programme was able to enhance students' acumen and curiosity about saving power and using it efficiently. Nodal teachers and students were engaged in a discussion with experts where they shared their learnings and results of the audit. The outline of the workshops comprised engagement sessions, collection of post-assessment forms and household audits, clarifying doubts of the students and developing strategies for energy consumption for schools, households, and neighbourhoods. A quiz contest was organized to assess the students' acumen. Another interesting observation suggested that students were more interested to learn about the effects of energy in day-to-day activities. Students, after attending the dynamic workshops and doing energy audits, installed LEDs at homes and gained practical knowledge of adopting energy-efficient choices in their daily activities to achieve a sustainable future.



Students with their copy of the resource book at Podar International School



Enthusiastic students filling up pre-assessment forms



Interactive energy audit sessions conducted by experts involved, who encouraged students to take corrective actions



Students showing excitement to share duly filled post assessment forms and energy audit forms



Students engaged in energy audit calculation

Concluding the programme

To commemorate the year-long activities of Protectors of the Environment - Phase III, school-wise concluding programmes were organized in Ahmedabad, Bharuch, and Mehsana.

After students were provided practical instructions on saving energy through various educational aids, they understood how to translate 'thought' into 'action' for adopting energy-efficient choices for sustainability. Students' interpretation of what a Green Architect is and what does adopting green ways in daily life mean were promising and it showed their increased levels of understanding the concept of energy consumption and how sources of renewable energy can be saved. Through this programme, the aim was to inculcate in today's youth the importance of building a sustainable society by practising energy-efficient ways of achieving ecological sustenance. As an empowered and a sensitized generation, these youngsters shall further pick up the baton in spreading the message of environment sustainability.

Ahmedabad

The students and teachers were acknowledged for their efforts and participation. In total, 6 schools participated in Ahmedabad. Here, 20 students received Certificates of Recognition; 12 teachers were given Certificates of Participation; 6 school principals were awarded with the School Excellence Awards; 31 students received LEDs; and Student Excellence Awards (Student Trophies, Gold and Silver) were presented to 2 students.



Mr. S B Patil (OSD and Deputy Director (GEDA)) and Mr. Manish Dwivedi (Chief Engineer, TERI, OTBL Gujarat) awarding Student Excellence Award (Gold) to a student of Little Star High School, Ahmedabad, Gujarat



Mr. S B Patil, Mr. Manish Dwivedi and Mr. Shwetal Shah (Consultant, Gujarat Climate Change Department) awarding the Principal of Little Star School with the School of Excellence Award



LED bulbs and Student Excellence Award (Silver) presented to students of Kendriya Vidyalaya, Viramgam, Ahmedabad

Bharuch

During the concluding programme in Bharuch, 18 students received Certificate of Recognition; 12 teachers were given Certificate of Participation; 6 school principals were awarded with the School Excellence Awards; 31 students received LEDs; and Student Excellence Awards (Student Trophies, Gold and Silver) were presented to 2 students.



Student Excellence Award (Gold) given to the winner at Podar International School



School of Excellence Award given to Mr. Abhishek Bagchi (Principal of School), RMPS International School, Ankleshwar



Students with certificates and LED bulbs

Mehsana

At the concluding programme in Mehsana, the teachers, experts and academicians were appreciative of the initiative - Protectors of the Environment in schools and applauded their efforts. Here, from the 6 schools who participated from Mehsana, 18 students received Certificate of Recognition; 12 teachers were given Certificate of Participation; 6 school principals were awarded with the School Excellence Awards; 30 students received LEDs; and Student Excellence Awards (Student Trophies, Gold and Silver) were presented to 2 students.



Mr. Shwetal Shah (Consultant, Climate Change Department) presenting the Student Excellence Award (Gold) to the winner



LED bulbs presented to the students of Kendriya Vidyalaya ONGC, Mehsana



OTBL representative Mr Mriganka presenting the principal with the School of Excellence Award



The School of Excellence Award given to teachers at Eklavya School, Mehsana



Student installing LED bulbs at Royal English School, Mehsana



Students looking forward to more workshops and thanking OTBL for conducting them