S.V.L.N.S GOVERNMENT DEGREE COLLEGE

(Estd:1984)

BHEEMUNIPATANM

ACCREDITED BY NAAC WITH B GRADE

DEPARTMENT OF PHYSICS

COMMUNITY SERVICE PROJECT

ON

AWARENESS ON ENERGY CONSERVATION AT CHITTIVALASA

DONE BY

Y. LIKHITHA, I B.Sc. (MPC)

REGD. NUMBER:

Submitted to

Sri. M.RAJESWARA RAO

Lecturer in Charge

Department of Physics

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This is to certify that this project is done by

……Y. LIKHITHA…… of ……B.Sc., (MPC)…. Semester……II……. Year…I…….

REGD. NUMBER:

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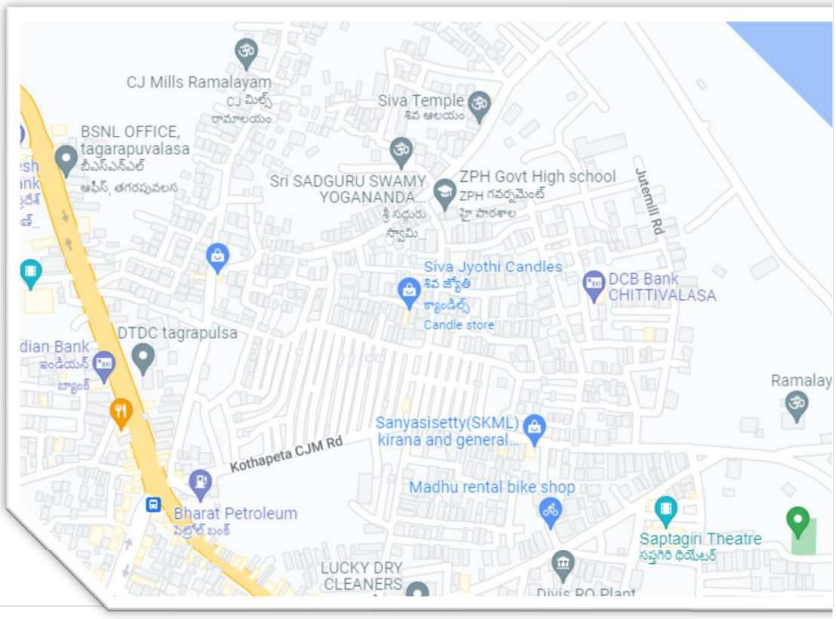
INDEX

DEMOGRAPHY OF CHIITIVALASA

The village Chittivalasa is in Visakhapatnam district situated in Andhra Pradesh state, with a population 110986. The male and female populations are 55069 and 55917 respectively. The size of the area is about 145.69 square kilometer

Area (2020)	**145.69 km²**
Population (2020)	**110986**
Population Density	**761 people per km²**
Male Population	**55069**
Female Population	**55917**
Google map Coordinates	**17.93418531892787, 83.43080454531209**



Introduction:

Energy conservation is the practice of reducing the consumption of energy by living organisms. Energy is conserved to reduce the cost of consumption and to preserve the limited existing resources of energy. Energy can be conserved by using energy-efficient devices and other methods to consume energy and reduce the use of energy when there is no requirement. We know that energy can neither be created nor destroyed. It can only be transformed from one form to another. So, it is important to conserve energy.

There are two types of sources of energy, namely renewable sources of energy and non-renewable sources of energy. Non-renewable sources of energy include fossil fuels like coal and petroleum. Many electric power plants use fossil fuels to generate electricity. These are exhaustible sources of energy that cannot be produced at a faster rate as we need them. They cannot be used endlessly. The formation of fossil fuels takes millions of years. So we should conserve these energy sources for our present and future generations.

Need for project on Energy Conservation:

Energy conservation is an idea and practice that focuses on saving our natural resources, especially those resources which are available in a limited amount. Non-renewable sources of energy are those that are consumed at a rate faster than that at which they are replenished.

These resources are widely used in the production of electricity by many electric power plants and in automobiles. Their availability is limited because they take millions of years to form. If we do not conserve energy and their resources, then soon they will get depleted. Therefore, it is advisable to use alternative sources of energy to save non-renewable energy sources and reduce the consumption of energy if possible. The following are the importance of energy conservation:

Energy conservation is necessary because it reduces the cost of consumption of energy. For example, when we reduce the use of electricity when not in use, then the cost per unit of energy also reduces. By using less electricity at home and using more energy-efficient appliances, we can reduce our electricity bills. That is how the conservation of electricity works.

Energy conservation helps in reducing the use of natural resources of energy like fossil fuels. For example, more amount of coal and petroleum is used to heat water and generate electricity in thermal power plants. If we save electrical energy, we save our natural resources, which are consumed in producing electrical energy.

Energy conservation reduces the waste which is released into the environment. It reduces unwanted carbon emissions into the atmosphere. For example, the burning of fossil fuels produces energy, and in this process, a lot of harmful gases are emitted into the air. It causes air pollution. Burning less amount of fuel reduces the unwanted contamination of the air.

Energy conservation helps in improving the quality of life. It also helps in reducing global warming and other pollutants.

December 14, is celebrated as energy conservation day. It focuses on making people aware of the importance of energy conservation. Energy conservation act, 2021 promotes the efficient use of energy and its conservation. It plans to reduce the production of energy in order to decrease greenhouse emissions.

Ways of Energy Conservation:

The primary way of energy conservation is to use clean and alternative sources of energy like wind energy, solar energy, tidal energy, and biomass energy. We can reduce the use of fossil fuels like coal, petroleum, and natural gas by switching to these energy sources. These energy sources are abundant in nature and can be harnessed at any time in any amount. Moreover, they are cheaper than fossil fuels. Some other ways of energy conservation are as follows:

- We should use CFL bulbs and LEDs instead of regular incandescent bulbs. Using CFLs will reduce the cost per unit of energy consumed. On the other hand, LEDs consume less energy than a regular incandescent bulb
- We should buy star-rated electrical appliances. An electrical device with a higher number of stars will consume less energy and reduces the cost per unit of energy.
- We should use sunlight in our homes, schools, and workplaces during the daytime. This will reduce our electricity bills.
- We should switch off fans, lights, and other electronic devices when not in use or before going out of the room.
- We should reduce the use of vehicles for going to places that are within walking distance, and we can increase the use of bicycles. This will reduce the unnecessary consumption of fuels like petroleum and CNG. It also helps in reducing air pollution.
- We must keep the windows and doors of our rooms open to ventilate them with natural air instead of using exhaust fans.
- We must use devices that work with the thermostat. It will automatically turn off devices when the desired temperature level is achieved. For example, it is used in geysers. This will reduce electricity consumption by devices when not required.

About carbon footprint:

A carbon footprint is the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions.

The average carbon footprint for a person in the United States is 16 tons, one of the highest rates in the world. Globally, the average carbon footprint is closer to 4 tons. To have the best chance of avoiding a 2°C rise in global temperatures, the average global carbon footprint per year needs to drop to under 2 tons by 2050.

Carbon foot print calculator:

Activity/ fuel use	Quantity	CO_2 in Kg	Note
Transportation			
Petrol in liters	1	2.33	Fuel in liters as used in personal vehicle. In case of car pool, divide total fuel volume by total number of people. All people in the car pool need to account for the divided fuel volume.
Diesel in liters	1	2.68	
Auto LPG Kg	1	3.06	If you use a car that uses LPG as the fuel.
Taxis in Km	1	0.31	For these modes of Public Transport, fill in approximate distance used.
Local Bus (Best) in Km	1	0.05	
Auto Rickshaw in Km	1	0.05	
Local Train In Km	1	0.10	
Domestic Use			
Number of LPG cylinders used for cooking	1	42.50	These reflect you residential consumption. You should get these values from keeping track of the LPG cylinders and from your gas agency and electric bills.
Electricity used in a month in KWH	1	0.90	
Average CO2 emission per year in tones due to all activities			
Saplings to be planted to neutralize carbon			A typical tree can absorb around **21 kilograms** of carbon dioxide (CO2) per year

Source of above calculator: https://www.tatapower.com/sustainability/sustainability-initiatives/customer/calculate-carbon-footprints.aspx.

Objectives of the Service Project:

- To create awareness on need of energy conservation to students and residents of the adopted village.
- To inculcate the methods to minimize the energy consumption at every household
- To create awareness on environmental degradation due to consumption of fossil fuels
- To emphasize the use of renewable energy sources.
- To create awareness on contribution of every citizen in carbon emissions, and to sensitize them to plant samplings and nurture them.

Methodology:

A survey has been conducted to find out the socio, economic and energy consumption details of sample household in the study area. In this survey purposive and random sampling techniques are adopted. A structured questionnaire was set up to get the data from households with respect to their socio- economic and energy consumptions. Twenty households are randomly selected from Chittivalasa village of Bheemunipatnam, Visakhapatnam District and conducted Socio-economic and energy consumption Survey. A Community awareness programme was conducted with respect to the methods to minimize the energy consumptions, also pamphlets are distributed with quoting ways to minimize energy consumption. Later a mini project work titled “Awareness on energy conservation” related to the habitation was taken up.

Research tools:

The data collected through structured questionnaire was analyzed by using tables, percentages, carbon foot print calculator.

S.V.L.N.S. GOVERNMENT DEGREE COLLEGE
BHEEMUNIPATNAM- VISAKHAPATNAM
CommunityService Projecton
AWARENESS ON CONSERVATION OF ENERGY AT CHITTIVALASA VILLAGE
PART B
(CONSOLIDATED VILLAGE DEMOGRAPHY AND ENERGY CONSUMPTION STATISTICS)

Panchayat: Area: Chittivalasa Population: 110986
Number of House Holds: 20 Post Office: Pin code:

Male: 31

Female: 33

Category wise population: SC……../ST……..OC….64…..

BC A……. BC B…… BC C…… BC D…….. PHC…02……

Number of Ration cards White ……18……. Pink……

Number of illiterates in the village……05…….

Number of graduates in the village……05…….
Road connectivity to village: Yes/No……Yes

Bus facility available: Yes/No …… Yes…….

Number of job holders in the village (Private/Government) ……05+03…….

Average electric power consumed in units (KWH) per house hold per year: 131KWh (Rs 473/-)

Average number of LPG Cylinders consumed for cooking per house hold per year: 5.55

Average number of liters of petrol/diesel consumed for transport per household per year: 108 lit (Rs 11880/-)

Average carbon emission due to energy consumption by household per year:

605.415 Kgs of Co_2

Calculation:

Due to Electricity consumption: 131× 0.90 = 117.9 Kgs

Due to LPG consumption: 5.55× 42.50 = 235.875 Kgs

Due to petrol consumption: 108×2.33 = 251.64 Kgs

Number of saplings to be planted to neutralize Co_2: 29

District: Visakhapatnam

State: Andharapradesh

Any other Information:

Which of the following are there in the survey area: Provide a brief description, indicating number, type etc.

Anganwadi/PlaySchool: Anganwadi

PrimarySchools: Yes

SecondarySchools: Yes

Colleges: Yes (Private)

HealthCentre(PHC/CHC): Yes

Hospitals: Yes

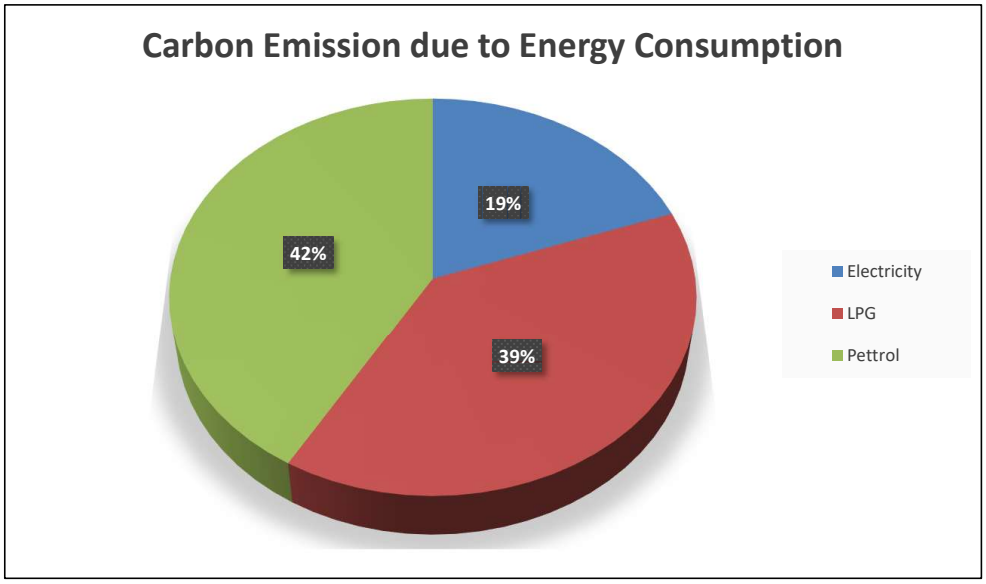
Youthclubs: Yes

Sportsclubs:

Environmentclubs:

VillageKnowledgeCentre/CommonMultiMediaCentre/CommonServiceCentre:

Library:



Photos of data collection through Questionnaires

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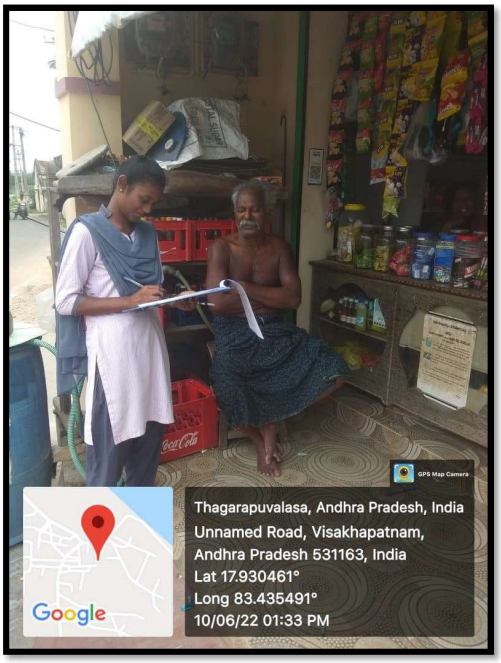


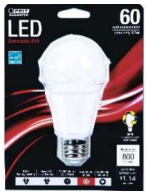
S.V.L.N.S GOVERNMENT DEGREE COLLEGE, BHEEMUNIPATNAM

STUDENT COOMUNITY SERVICE PROJECT

AWARENESS PROGRAMME ON ENERGY CONSERVATION

AT CHITTIVALASA

ఇంధన పొదుపుపై అవగాహన



- విద్యుత్ ను పొదుపుగా ఉపయోగించాలి.
- LED బల్బులను ఉపయోగించుట ద్వారా విద్యుత్ ను ఆదా చేయవచ్చు.
- ఇదు నక్షత్రాల గృహోపకరణాలను ఉపయోగించుట ద్వారా విద్యుత్ ను ఆదా చేయ వచ్చు.

- అవసరం లేనపుడు విద్యుత్ పరికరాలను గుర్తుగా ఆపవలే.
- BLDC ఫ్యాన్లను ఉపయోగించుట ద్వారా విద్యుత్ ను పొదుపు చేయవచ్చు.
- ఫ్రిజ్ తలుపును ను అనేక సార్లు తెరవరాదు.
- సౌర ఫలకల ద్వారా విద్యుత్ ను వినియోగించుట ద్వారా కరెంట్ బిల్లును తగ్గించవచ్చు.

- నీటిని పొదుపు గా వినియోగించాలి.
- LPG ని పొదుపుగా ఉపయోగించాలి.
- కాపర్ బోటమ్ పాత్రలను, కుక్కర్ లను ఉపయోగించి, స్టౌవ్ ను సిమ్లో ఉంచి పదార్థాలను వండవలే.

- బ్యాటరీతో నడిచే వాహనాలను వినిగించవలే.
- ప్రజా రవాణా వ్యవస్థను ఉపయోగించవలే.
- వ్యక్తిగత వాహనాలను తరచుగా సర్వీసు చేయించవలే.

- కార్బన ఉద్గారాలను తగ్గించవలే.
- మన గ్రామం నందు మొక్కలను నాటుట ద్వారా కర్బన ఉద్గారాలను తగ్గించవచ్చు.

అవగాహన కార్యక్రమాన్ని నిర్వహించినవారు

S.V.L.N.S. ప్రభుత్వ డిగ్రీ కళాశాల I BSc(MPC) విద్యార్థులు.

Mentor: M.Rajeswara Rao, Lecturer in Physics

Conclusions:

Conducted community service project survey at Chittivalasa village by collecting Socio-economic and energy consumption data through a structured questionnaire from randomly selected 20 households.

An awareness programme was conducted on Energy conservation and methods to reduce energy consumption, use of alternate sources of energy by distributing pamphlets.

By using carbon foot print calculator, the average Co_2 emission due to energy consumption at sample households is calculated, and created awareness how to neutralize these emissions by planting saplings in that village.