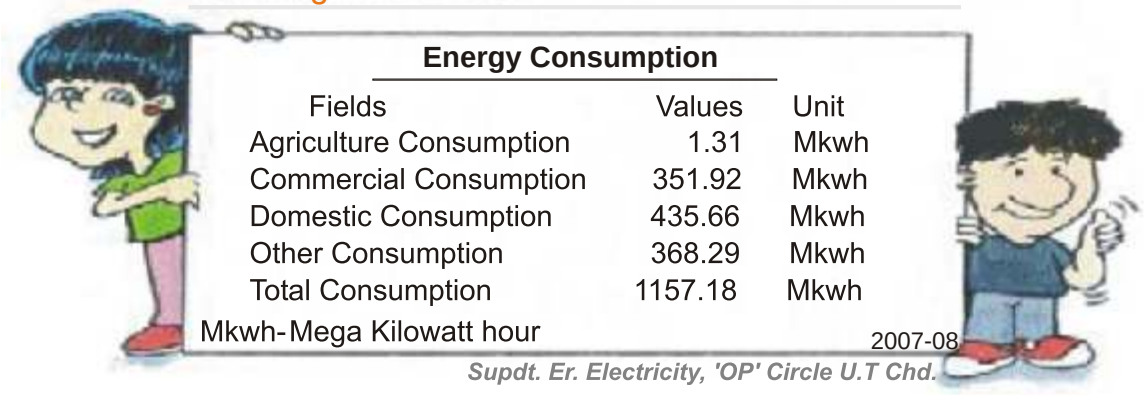
ENVIS CENTRE, CHANDIGARH
NewsLetter
Paryavaran - Patra

Chandigarh State of Environment

Chandigarh Statistics



Energy Consumption

Fields	Values	Unit
Agriculture Consumption	1.31	Mkwh
Commercial Consumption	351.92	Mkwh
Domestic Consumption	435.66	Mkwh
Other Consumption	368.29	Mkwh
Total Consumption	1157.18	Mkwh

Mkwh-Mega Kilowatt hour

2007-08

Supdt. Er. Electricity, 'OP' Circle U.T Chd.

WHAT IS ENERGY

Energy is a major source of life on Earth. Energy lights our cities, powers our vehicles, warms and cools our homes, cooks our food, plays our music and many more. Energy is defined as the ability or the capacity to do work. During 19th century when energy sources such as petroleum products came into existence, the use of renewable energy sources declined. With the global oil crises of 1973 & 1979-80, the world was motivated for adopting renewable to supplement the energy requirements. According to Ministry of New and Renewable Energy (MNES), the renewable sources accounted for 7169 MW, representing 5.7 percent of the total power generating capacity of the country as on 31st December 2005. **India ranks 4th in the world in the field of wind energy**

Source: Ministry of Power, GOI;Ministry of New and Renewable Energy,GOI

GOETHERMAL ENERGY

TIDAL ENERGY

WIND ENERGY

BIOMASS

For Private Circulation only

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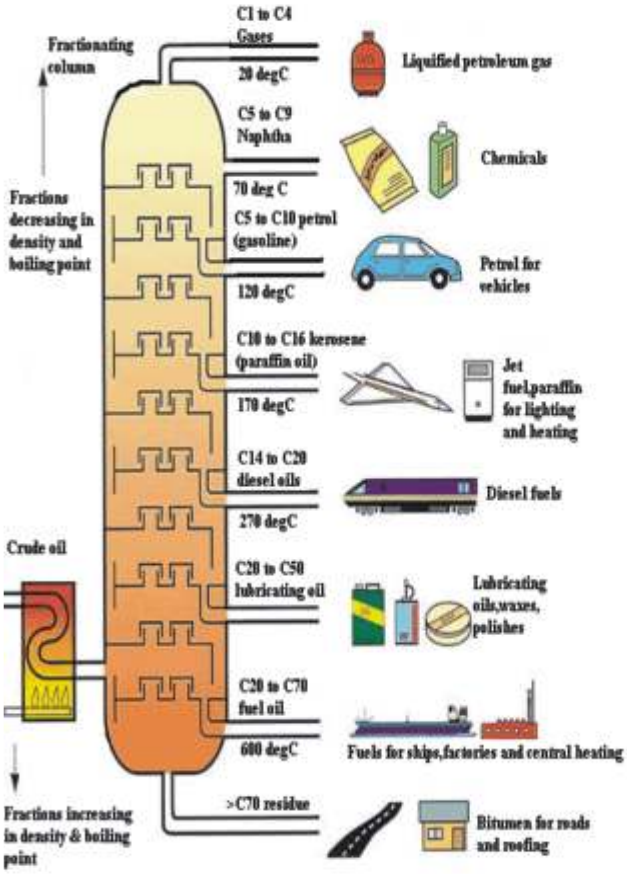
CONVENTIONAL SOURCES OF ENERGY

The natural resources that cannot be re-made, re-grown or regenerated on a scale comparative to their consumption are called non-renewable or conventional sources. They exist in a fixed amount. Fossil fuels (such as coal, petroleum and natural gas) and nuclear power are examples. These resources take millions of years to form naturally and cannot be replaced as soon.

Fossil fuels are found in deposits beneath the earth. Million of years ago, plants, animals and micro-organisms were buried under earth. Due to high temperature and pressure, finally they were converted into fossil fuels like coal, petroleum and natural gas. Fossil fuels currently account for about 90 percent of the world's energy consumption. They provide around 66% of the world's electrical power, and 95% of the world's total energy demands.

Petroleum is a naturally occurring, flammable liquid found in rock formations, consisting of a complex mixture of hydrocarbons of various molecular weights. The uses of some of the petroleum products are Aviation Turbine Fuel (ATF) or internationally better known as Jet A-1. Jet A-1 is fuel for jet or turbo jet type of plane. Superior Kerosene Oil (SKO) is broadly used as an illuminant, cooking purposes, solvents in paints/printing inks, raw material for n-paraffins, most importantly as a low sulphur fuel in boilers /furnaces. High Speed Diesel (HSD) is used as a fuel for high-speed engines having 750 RPM. Diesel engines are used in cars, motorcycles, boats and locomotives. Light Diesel Oil (LDO) is used in lower RPM engines, used in Lift irrigation pumpsets, DG Sets and as a fuel in certain boilers and furnaces. Liquefied Petroleum Gas (LPG) has wide application in household and industrial purposes. Furnace oil (FO) is used for the purpose of generation of heat and power. Low Sulphur Heavy Stock (LSHS) is in lieu of FO in the same applications where furnace oil is suitable. LSHS have higher pour point than FO and low sulphur content. Motor Gasoline/Gasoline are used in internal combustion spark-ignition engines, off-highway utility vans and farm machinery. Bitumen finds its wider role in constructions of roads, runways, water proofing, paint industries and ceramic industries.



CONSUMPTION OF PETROLEUM PRODUCTS(IN METRIC TONNES)

Year	LPG	MS	ATF	SKO	HSD	LDO	FO/LSHS	Bitumen	Lubes	All Products
2001-02	28999	46589	20259	13310	60248	1553	9921	6510	809	188198
2002-03	29982	54305	27894	13706	53899	2744	8608	4680	776	196594
2003-04	30603	57541	23487	13250	59154	1399	9564	7573	917	203488
2004-05	30867	67149	24170	12249	67901	622	18025	4911	1646	227540
2005-06	30574	71643	25119	12110	74223	575	18046	6644	1501	240435
2006-07	32568	76148	24562	10941	82924	493	10901	8711	1376	248120
2007-08	35098	84989	27595	10203	91742	401	11494	3923	1360	266805

Manager- SLC, UTC, HPCL, Chandigarh

On an average, the 60 million sq km of tropical seas absorb solar radiation equal to the heat content of 245 billion barrels of oil.

CONVENTIONAL SOURCES OF ENERGY

Coal is readily combustible, found in many forms (Anthracite has the highest percentage of carbon), regarded as world wide source of carbon dioxide emissions. Coal is primarily used as solid fuel to produce electricity and heat through combustion, and also for cooking purposes.

Natural gas consisting mainly of methane which is colourless, odourless fuel that burns cleaner than many other traditional fossil fuels. It is used for heating, cooling and production of electricity and in industries. Natural gas is obtained by drilling into the earth's crust and refined to remove impurities. Emissions of pollutants are fewer than those given off when other fossil fuels are burned.

Nuclear Fuel uses of the radioactivity of some elements like Uranium. The nucleus in the atom breaks down to release energy and produce fast-moving particles and atoms of other elements. These fast moving particles then strike other atoms, causing them to break down and produce nuclear reactions. As the reactions proceed heat is produced and electricity is generated.

COMPRESSED NATURAL GAS

Compressed Natural Gas (CNG) is a substitute for gasoline (petrol), diesel, or propane fuel. Inspite of a non-renewable source of energy it is considered to be environment friendly. It is made by compressing natural gas, which is mainly composed of methane (CH_4), to less than 1% of its volume at standard atmospheric pressure. It is stored and distributed in hard containers, at a normal pressure of 200–220 bar (20–22 MPa), usually in cylindrical or spherical shapes to maintain equal pressure on the walls of the containers.CNG is a safe fuel. Being lighter than air, it disperses easily into the atmosphere. CNG is 130 octane, which is considerably higher than 93 octane for petrol; consequently, CNG vehicle is more energy efficient. Higher octane rating reduces carbon dioxide emissions. Compared to petrol or diesel, CNG vehicles emit 40% less of nitrous oxide (a toxic gas that creates smog), 90% less of hydrocarbons (which carry carcinogens), 80% less of carbon monoxide (a poisonous pollutant), and 25% less of carbon dioxide (a major greenhouse gas). Further, noise level of CNG engine is much lower than that of diesel. In response to high fuel prices and environmental concerns, compressed natural gas is started to be used in light-duty passenger vehicles, pickup trucks, medium-duty delivery trucks, in transit and school buses.

Source http://www.vigyanprasar.gov.in/comcom/inter52.htm

NON CONVENTIONAL SOURCES OF ENERGY

Any source of energy that gets replenished naturally, ecological safe and does not suffer permanent depletion due to use can be called renewable or non-conventional sources of energy. Sun, wind, water flowing in rivers and streams, ocean tides, forests, vegetation, soil and animals are all renewable resources as long as they are properly conserved. A renewable resource differs in that it may be used but not used up.

Solar energy is the energy transmitted from the sun in the form of electromagnetic radiations. It is the most readily available source of energy and also the most important. The amount of solar energy impacting the surface of earth is 1000 watts per square meter, which is about 32.8 million MW every second on the Indian land mass. India is one of the country with long days and plenty of sunshine is suitable for harnessing solar energy. Solar panels absorb the energy of the sun to provide heat for cooking and for heating water. India receives solar energy equivalent to over 5000 trillion kWh/year, which is far more than the total energy consumption of the country.

Geothermal manifestations are wide spread in India in the form of 340 hot spring sites.

NON CONVENTIONAL SOURCES OF ENERGY

Biomass energy resources are derived from the carbonaceous waste of human, by-products from the timber industry, agricultural crops, raw material from the forest, major parts of household waste and wood. It makes use of biofuels as such methane (biogas) generated by sewage, farm, industrial, or cow dung etc. Biomass energy depends on combustion and therefore produces carbon dioxide. It is an important source of energy and the most important fuel worldwide after coal, oil and natural gas. Biomass energy is abundantly available on earth.

Water Energy is energy in the flowing water can be used to produce electricity. Energy can be extracted from tides by creating a reservoir or basin behind a barrage and then passing tidal waters through turbines in the barrage to generate electricity. Hydro power is one of the best, cheapest, and cleanest source of energy. This is in fact one of the earliest known renewable energy sources in the country.

Geothermal energy We live between two great sources of energy, the hot rocks beneath the surface of the earth and the sun in the sky. The core of the earth is very hot and it is possible to make use of this geothermal energy. These are areas where there are volcanoes, hot springs, geysers, and methane under the water in the oceans and seas.

Wind energy is the kinetic energy associated with the movement of atmospheric air. This form of energy can either be harnessed through mechanical application (sailing of boats, corn grinding, water pumping, winnowing, aviation etc) or electric application (wind battery charging, large scale power generation through Wind Turbine Generations (WTG), Wind-Solar Hybrid systems).

Energy from the sea i.e. ocean thermal, tidal and wave energy A large amount of solar energy is stored in the oceans and seas. The process of harnessing this energy is called OTEC (Ocean Thermal Energy Conversion). It uses the temperature differences between the surface of the ocean and the depths of about 1000m to operate a heat engine, which produces electric power. This temperature difference may be found in the tropical regions of the world. Power extracted from the motion of sea waves at the coast is called wave energy. Mechanical power, which may be converted to electrical power, generated by the rise and fall of ocean tides is called tidal energy.

Co-generation is the concept of producing two forms of energy from one fuel. One of the forms of energy must always be heat and the other may be electricity or mechanical energy. When fuel is burnt in a boiler to generate high-pressure steam. This steam is used to drive a turbine, which produces electricity. Co-generation is significant in cost saving and reduction in emission pollutants.

Fuel Cells a device that generates electricity by a chemical reaction. The fuel cell has two electrodes, one positive (cathode) and one negative (anode). The electricity produces at the electrodes. Fuel cell also has an electrolyte and a catalyst. One great appeal of fuel cells is that they generate electricity with very little pollution generating a harmless byproduct, namely water.

LPG CONNECTIONS RELEASED IN CHANDIGARH

Year	No of Connections Released (IOC)	No of Connections Released (HPC)	No of Connections Released (BPC)	Customer Population (Lacs) (IOC)	Customer Population (Lacs) (HPC)	Customer Population (Lacs) (BPC)	DBC Population (Lacs) (IOC)	DBC Population (Lacs) (HPC)	DBC Population (Lacs) (BPC)
2003-04	7085	3558	2134	1.82	0.65	0.42	1.16	0.52	0.24
2004-05	8325	2954	1799	1.87	0.67	0.43	1.15	0.44	0.23
2005-06	7234	1272	1186	1.92	0.68	0.45	1.15	0.44	0.24
2006-07	8900	1192	1105	2.1	0.68	0.46	1.2	0.48	0.25
2007-08	8499	2190	1015	2.1	0.69	0.47	1.2	0.46	0.25

IOC- India Oil Corporation **BPC**-Bharat Petroleum Corporation **HPC**-Hindustan Petroleum Corporation
DBC- Double Bottle Connection

Manager, SLC, UTC, HPCL

ADMINISTRATIVE INITIATIVES

To promote use of renewable energy sources, Department of Science and Technology, Chandigarh Administration is providing subsidy on various types of environment friendly items like battery operated vehicles, solar water heaters, solar street lights and organizing educational trips, undertaking research activities and launching campaigns.

Battery Operated Vehicles/BOV Due to increased number of vehicles on the Chandigarh roads, obnoxious gases are increasing in the atmosphere. So, to promote battery operated vehicles(two wheelers) in city, DST is providing subsidy to residents of Chandigarh at rate of 5000 or 15% of the total cost whichever is more.

Solar Photovoltaic Technology converts the solar energy into electricity with the use of SPV modules. It generates no air pollution or hazardous waste and depends upon primary source i.e. sun. DST has installed 229 solar street lights in the rural areas in the year 2007-08.

Solar Water Heaters are cost competitive and environment friendly as the fuel required for them is free of cost (sun). DST is promoting this source of energy by providing subsidy at the rate of 25% of the total system cost up to 300LPD system (domestic).

Solar Green Houses with glass or plastic roof and walls heats up by harnessing solar radiations. Therefore, it provides a controlled environment for development of off season vegetables/flowers etc. Funds have been provided by DST to various educational institutes for installation of SGHs.

State Level Energy Park has been planned in the Botanical Garden, Sarangpur. For this, fund has been committed by Ministry of new and renewable energy and Government of India.

To popularize science among students and general masses, DST organizes various activities like science quizzes, fairs, exhibitions, tours and also provides grants to educational institutes of U.T. to popularize science.The department also invites applications for undertaking research activities and give final assistance to research institutions.

GET STARTED NOW-TIPS TO SAVE ENERGY

»Turn off everything not in use: lights, TVs, computers, etc

»Check your furnace or air conditioner filter each month.Dirty filters block air flow, increasing energy use.

»During hot months, keep window coverings closed and in winter, let the sun in.

»Activate “stand by” features on computers and office equipment that power down when not in use for a while but turn off equipment during longer periods of non-use.

»In summer, using fans to supplement air conditioning allows you to raise the thermostat temperature, using less energy.

»Switch to cold water washing of laundry.

»Replace your incandescent light bulbs with compact fluorescent bulbs.

»Take advantage of daylight by using light-colored, loose-weave curtains to allow daylight to penetrate the room.

»Look for energy efficiency labels when going to buy products like TVs, cell phones, refrigerators and air conditioners etc.

»Consider buying a laptop next time, they use much less energy than desktop computers.

»Unplug battery chargers when the batteries are fully charged because they draw power continuously, even when the device is not plugged into the charger.

Chandigarh is all set to become the first solar city of the country By 2012.

ENVIRONMENT THROUGH OUR EYES

The name, our ancestors had given to research and science and technology of ancient times, was Tapasya. They experimented with natural forces to control those including sun, water, fire, sky, air, and earth. They gained perfection to set the harmony between nature and life. Hence they enjoyed healthier life and the age that spanned over hundreds of years. Over the period of time under the circumstances like attacks by outsiders and misuse of power leading to end of a whole era like Mahabharta, India had lost its identity of 'Golden Sparrow' and was dwelled into a dark age of ignorance. During this period we had consumed nonrenewable sources of energy like coal and petroleum products to our maximum. We had cared less of forests which at one time were called 'Devtas' by our ancestors. In the twenty first century India has emerged strong in economy and as powerful as leader of world in science and technology. It is occupying fourth rank in the field of wind mill in the world. With every state contributing its share in growth, Chandigarh Administration has taken a number of steps to bring harmony in environment of Chandigarh using science and technology as a modeling tool. Projects like state level energy park which would be using solar energy to illustrate the power of sun is on the way to completion. Paryavarn Bhawan is another wonder of engineering which would control the wind and light to ventilate the whole building without use of artificial lights during the day time. Subsidies are provided for various educational and institutional researches. Battery operated vehicles are supported. Solar street lights and water heating systems are installed. Public awareness activities and schemes are ongoing. It is emphasized that one should be encouraged to use renewable sources of energy over nonrenewable sources of energy .

PJS Dadhwal, Additional Director to Science and Technology Chandigarh

COMPACT FLOURESCENT LAMP

A fluorescent lamp or fluorescent tube is a gas-discharge lamp that uses electricity to excite mercury vapour in argon or neon gas, resulting in a plasma that produces short-wave ultraviolet light. This light then causes a phosphor to fluoresce, producing visible light. Switching over to Compact Fluorescent Lamps (CFL) from incandescent lamps all over the country will result in saving of about 18,000 MW per year. CFL bulbs produce the same amount of light by using 1/4 of the electricity. CFLs reduce the electricity consumption and have a longer lifespan which coincides with the reduced energy consumption, reduced pollution and reduced emission of green houses gases (carbon dioxide). The Chandigarh Administration has adopted the Bachat Lamps Yojna Scheme recently to subsidize high power saver Compact Fluorescent Lamps (CFL) through the newly formed Chandigarh Renewable Energy of Science and Technology (CREST). To boost this scheme, the Administration has reduced the rate of VAT from 12.5% to 4% on the sale of Compact Fluorescent Lamps (CFL).

Source: http://en.wikipedia.org/wiki/Fluorescent_lamp

RAJIV GANDHI AKSHAY URJA DIWAS

Rajiv Gandhi's birth anniversary (August 20) is celebrated as Akshay Urja Diwas whose ultimate aim is 'Akshay Urja Se Desh Vikas, Gaon-Gaon Bijali Ghar- Ghar Prakash'. It is an effort for creating awareness about the development of renewable energy in our country, informing about the latest developments, sharing the views and providing feed back for further improvement. Rapid economic growth and growing energy requirements are making people more reliable on non-conventional energy sources whose resources are abundantly available in India. Our government is ready to harness energy from renewable sources and leading towards the sustainable development and energy security.

Energy Saved is Energy Generated. Save Today Survive Tomorrow

Dear Information Seeker,

ENVIS CENTRE, Chandigarh furnishes you with the services to collect and disseminate information related to environment of Chandigarh. To share information with us you are requested to fill up the form given below.

Your feedback is valuable to us and will be highly appreciated

- Name _____
- Designation _____
- Department _____
- Address _____

_____ City _____

- State _____ Country _____ Pin |_|_|_|_|_|_|
- Phone _____ Fax _____
- Email _____

Your views on scope of improvement :

- Interest Area _____

I would like to have information on following :

e-mail : ch@envis.nic.in • Web : www.chandigarhenvis.gov.in

At the End of...

ENVIS CENTRE, CHANDIGARH
Newsletter
Paryavaran-Patra

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Data Entry Operator

CARBON CREDITS

The concept of carbon credits came into existence as a result of increasing awareness for controlling carbon dioxide emissions. Carbon credits are national and international emissions trading schemes that have been implemented to mitigate global warming. They provide a way to reduce greenhouse effect emissions on an industrial scale by capping total annual emissions and letting the market assign a monetary value to any shortfall through trading. Credits can be exchanged between businesses or bought and sold in international markets at the prevailing market price. Credits can be used to finance carbon reduction schemes between trading partners and around the world.

QUOTES

- We can achieve energy independence by 2030 if we focus on renewable energy sources.- A.P.J. Abdul Kalam
- Energy conservation is the foundation of energy independence. -Thomas H. Allen
- I have no doubt that we will be successful in harnessing the sun's energy... If sunbeams were weapons of war, we would have had solar energy centuries ago.-Sir George Porter
- Clearly, we need more incentives to quickly increase the use of wind and solar power; they will cut costs, increase our energy independence and our national security and reduce the consequences of global warming.-Hillary Rodham Clinton
- Renewable energy is proven technology, the price is dropping, the rest of the world is going that way, that's where our investment should be going as well.-Bob Brown
- The use of solar energy has not been opened up because the oil industry does not own the sun.-Ralph Nader.

USEFUL ENVIRONMENTAL WEB LINKS

http://mnes.nic.in/
http://petroleum.nic.in/
http://powermin.nic.in/
http://neda.up.nic.in/
http://dst.gov.in/
https://www.llnl.gov/str/
http://dbtindia.nic.in/
http://nrdms.gov.in

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To,

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