Sustainable city essay sample

Education, Sustainability

Energy use is one of the most important issues in the world today. People are starting to run out of energy already now, and in the future more and more energy is likely to be increasingly needed since the world population is growing. Fossil fuels are the main resources for energy at present. According to many predictions, we are going to run out of oil in 40 years and coal in 75-150 years. People were using these effective but non-renewable energy sources as much as they wanted for many centuries without thinking that these resources will not last forever, and that will cause big problems for future generations.

Fortunately, there are also renewable energy resources, such as water, wind, solar, geothermal, biomass power – and they will not run out as long as the Earth exists. For instance, the amount of sun energy hitting the Earth in one minute is greater than energy consumption of the entire planet during one year! These sources of energy are not bad for the environment too, unlike fossil fuels which pollute it. We need to start using the renewable resources on a large scale, and we need to think of new effective ways to get energy. Until then we must save the energy we still have now, so there is as little wasting of energy as possible. Everybody has to be involved to make that work because if the world runs out of energy everyone will suffer.

We live in an urban world since the majority of people on our planet live in cities. Therefore our future is pinned on how we develop our cities and the neighboring areas, how good are our housing and transportation facilities, what technologies are used.

A sustainable city needs to use renewable energy technologies for its power supply facilities. Such technologies should be convenient to use, easy to run and maintain, as well as cost-effective. They should be long-lasting, and their operation should not have an adverse effect on human life and urban environment. They should also be able to generate considerably more energy over their service life than was invested in their construction and operation and must produce enough power to meet the city requirements.

A sustainable city should get rid of ineffective and polluting industries and technologies. Energy from wind, the sun and water is readily available and causes much less environmental problems as compared to other sources of energy. Extracting geothermal energy from the earth and processing of wastes such as biomass also offer great opportunities. According to the National Renewable Energy Laboratory of the U. S. Department of Energy, “ technology exists to turn almost any form of biomass into any form of energy.”

Efforts to implement a concept of a sustainable city are being made worldwide. In the USA, the Green City Project intends to make Troy, NY, situated just north of Albany, a model sustainable city. The Green Cities Project is based on the principles of sustainability defined as “ the method that ecosystems use to perpetuate themselves.” In order to make our cities sustainable, we should follow three basic principles of ecosystem sustainability:

* Disposal of waste and replenishment of nutrients or resources by recycling

* Using renewable resources as the source of energy

* Maintaining the proper size of consumer populations so as to prevent overuse of resources

On the basis of similar principles, the City Council of Vancouver, Canada, is implementing a comprehensive program to ensure the economic, social and environmental sustainability of the city and its environs. This program envisions that “ using renewable resources is encouraged and supported, while the use of non-renewable resources should be minimized.” Since 1978, when the City Council adopted a “ Framework for a Vancouver Energy Strategy”, energy-saving measures have been introduced in city buildings using modern technologies including computerized energy management control systems. As a result, Vancouver was awarded the BC Hydro Power Smart Excellence award in 1998 for outstanding achievement in energy efficiency. Another good example is the use of energy-efficient light emitting diodes (LED) for traffic lights instead of usual electric bulbs since 2004 which saves energy worth over USD 300, 000 per year.

Several European cities have also worked out strategies of sustainable development using renewable energy sources. An example of such a strategy is the Sustainability Barcelona Project. In 2000, Barcelona became the first European city which passed a special law on the use of solar energy. According to this law, all new building must use solar energy for their hot water supply. In addition to solar energy provided by 2, 800 hours of sunshine a year, other renewable energy sources are increasingly used for domestic needs, transport and power generation. Effective measures are

also taken to reduce consumption of energy through its efficient use. Today, Barcelona is one of the model cities in dealing with energy matters and their impact on the environment. The Barcelona City Council is also developing an information and modeling system as an integrated tool to support decisions regarding sustainable urban environment.

Another good example is Denmark, which is a world leader in using environmentally clean energy. About 14 % of energy consumed in Denmark is produced from renewable resources. In 1985, Denmark decided to ban nuclear energy and promote the use of environmentally clean energy. As a result, today Denmark produces the same percentage of energy from renewable resources as Russia gets from its nuclear power plants. Organization called Green City Denmark was set up to promote Danish expertise in this area. The exemplary municipalities of Århus, Silkeborg, Ikast, Herning and Videbæk and the counties of Ringkjøbing and Århus share their valuable experience with other partners.

There is also an European Green Cities Network whose aim is to promote knowledge and experience about modern technologies used in various environmental housing projects. Some examples of such demonstration projects and best practice cases are given below:

Austria, Radstadt – New identity for urban area

Austria, Salzburg – Stieglgrьnde – Social innovation by means of energy efficiency, social initiatives, green areas and training of tenants

Belgium, Antwerp Region – The first pellet heated social housing project

Belgium, Houtvenne – Low-income housing with reduced energy costs

Czech Republic, Usti region – Family house using heat pump and solar collectors

Denmark, Copenhagen – Residents' influence on resource saving solutions

Denmark, Copenhagen – Prefabricated CO2 neutral rooftop dwelling

Denmark, Herning – Ecology pays pack in lowering rents

Denmark, Roskilde – Munkesoegaard – Sustainable building practices in an ecological community

Finland, Kuopio – Energy efficient technology and modern architecture

Fance, Grenoble – Improving environmental efficiency of urban energy supply systems

France, Grenoble – Reduction of running costs in social hosing through energy and water savings

Greece, Volos – High-tech preservation of architectural heritage

Greece, Volos – Rehabilitation of the old grain sanitation building

Italy, Abruzzo – Renewable energy supply to a " Green Region"

Italy – Brescia – A new " tune up" of innovative technologies

Italy, Piemonte – Increasing thermal efficiency in urban dwellings

Lithuania, Vilnius – Renovation success stories

Poland, Piaseczno Secondary school – Use of heat recovery ventilation supplied by PV

Poland, Rawicz Hospital – Use of solar technology in public buildings

Spain, Vilanova i la Geltrъ – Innovative utilisation of passive solar design

UK, Portsmouth – Highly efficient heating system for improving thermal performance

UK, Portsmouth – Sustainable housing solutions in difficult and challenging urban area

An impressive project to build a city of the future is being implemented in China. Dontang Eco-City near Shanghai “ will be the first eco city that integrates all aspects of liveability with all aspects of sustainability,” Herbert Girardet, an environmental consultant, said at the UN World Urban Forum held in Vancouver in June, 2006. He also said that “ the city of 500, 000 people being built on an island near Shanghai would be an extraordinary example to the world.” Only 40 % of Dontang Eco-City will be used for buildings, and 60 % of its area will be green spaces. Most energy will be produced from renewable resources, such as wind, sun and biomass.

Creating a sustainable city has important political and economic implications. Of course, creating a sustainable city requires significant investments – a lot of money and other resources. However, economic and political benefits from introduction of new technologies are much greater.

Such technologies permit to save money by using resources more efficiently, provide clean environment for better health and thus reduce health costs, create new jobs, increase political stability and predictability.

In future, the use of renewable sources of energy for power generation will continue to grow. Fossil fuels will largely be used for production of important chemicals rather than for heating or fuelling cars. Better use of energy will also mean no wasting of energy, and everybody should take part in these efforts for them to be successful.

In addition to alternative sources of energy already mentioned – solar, wind, water, geothermal, biomass – power produced from hydrogen will become a very important source of cheap and environmentally clean energy. Today, there are already big power stations generating energy from hydrogen produced from natural gas. Future hydrogen power stations will use water as the source to produce hydrogen. Water will also be used for hydrogen-powered engines in cars which will cause no pollution. Such technologies already exist but they are not very efficient and need to be improved.

The future is clear and bright, and all of us should contribute as much as we can to make it come true!