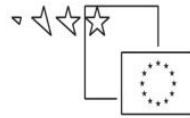




REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ŠOLSTVO IN ŠPORT



Naložba v vašo prihodnost
OPERACIJO DELNO FINANCIRA EVROPSKA UNIJA
Evropski socialni sklad

STROKOVNA TERMINOLOGIJA V ANGLEŠČINI

ŽIVA TRSTENJAK

Višješolski strokovni program: Varstvo okolja in komunala
Učbenik: Strokovna terminologija v angleščini
Gradivo za 1. letnik

Avtorica:

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CIP – Kataložni zapis o publikaciji
(za vas ga pridobi projekt Impletum)

Izdajatelj: Konzorcij višjih strokovnih šol za izvedbo projekta IMPLETUM
Založnik: Zavod IRC, Ljubljana.
Ljubljana, 2011

Strokovni svet RS za poklicno in strokovno izobraževanje je na svoji 120. seji dne 10. 12. 2009 na podlagi 26. člena Zakona o organizaciji in financiranju vzgoje in izobraževanja (Ur. l. RS, št. 16/07-ZOFVI-UPB5, 36/08 in 58/09) sprejel sklep št. 01301-6/2009/11-3 o potrditvi tega učbenika za uporabo v višješolskem izobraževanju.

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Gradivo je sofinancirano iz sredstev projekta Impletum Uvajanje novih izobraževalnih programov na področju višjega strokovnega izobraževanja v obdobju 2008–11.

Projekt oz. operacijo delno financira Evropska unija iz Evropskega socialnega sklada ter Ministrstvo RS za šolstvo in šport. Operacija se izvaja v okviru Operativnega programa razvoja človeških virov za obdobje 2007–2013, razvojne prioritete Razvoj človeških virov in vseživljenjskega učenja ter prednostne usmeritve Izboljšanje kakovosti in učinkovitosti sistemov izobraževanja in usposabljanja.

Vsebina tega dokumenta v nobenem primeru ne odraža mnenja Evropske unije. Odgovornost za vsebino dokumenta nosi avtor.

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PREDGOVOR

Whatever is good to know is difficult to learn.
Greek proverb

Pred vami je učbenik za predmet Strokovna terminologija v tujem jeziku – angleščina v višješolskem strokovnem študijskem programu Varstvo okolja in komunala.

Cilj angleškega jezika stroke (ang. English for Specific Purposes) je pripraviti študenta za resnično in stvarno delovno okolje, zato izhaja iz uporabe avtentičnih angleških besedil, z namenom spodbuditi študente, da bi pogosto posegali po tuji literaturi ter znali tuje vire uspešno uporabljati pri svojem delu.

Vaje in naloge so sestavljene tako, da simulirajo vsakdanje situacije na delovnem mestu, npr. poslovne pogovore, opise delovanja naprav in delovnih procesov, izpolnjevanje obrazcev in pisanje poslovnih pisem ter združujejo štiri jezikovne spretnosti: poslušanje, govor, branje in pisanje.

Učno gradivo zajema strokovno terminologijo različnih tematskih področij. Ta so: varstvo okolja, urejanje prostora, varstvo zraka, prostorsko planiranje, urbanistično načrtovanje, gospodarske javne službe, komunalne dejavnosti, oskrbovalni sistemi, oskrba z vodo in čiščenje odpadnih voda, gospodarjenje z odpadki, komunalna energetika, raba energije obnovljivih virov ter promet in gospodarjenje z javnimi površinami.

V upanju, da bo gradivo pripomoglo k bolj samozavestni uporabi angleščine v poslovnih situacijah in pri delu, vam želim veliko uspeha pri študiju.

Avtorica

1 ENGLISH AND ENVIRONMENTAL ENGINEERING

After this unit you will be able to:

- speak about the importance of learning English for Specific Purposes;
- find specific information in an authentic English professional text;
- look for and use internet sources;
- compare English and Slovenian education of environmental engineering;
- fill in a form in English.

1.1 ENGLISH LANGUAGE LEARNING AND TEACHING



The subject of this learning material is called English for Specific Purposes. Read the text *Bottled Water Isn't Healthier Than Tap* and discuss the following:

- Which environmental issues does it address?
- Which are the specific expressions of environmental science?



Bottled Water Isn't Healthier Than Tap

A bottle of spring or mineral water has become the lifestyle accessory of the health-conscious. No longer a luxury item the beverage has become a common sight worldwide. But according to campaigners, the planet's health may be suffering as a result.

A new report warns that people's thirst for bottled water is producing unnecessary garbage and consuming vast quantities of energy, even in areas where perfectly good drinking water is available on tap.



The report, released by the Earth Policy Institute, says global consumption of bottled water doubled between 1999 and 2004, reaching 154 billion liters annually. (Adapted from: http://news.nationalgeographic.com/news/2006/02/0224_060224_bottled_water.html, 21 May, 2010)



Read the text again and find the Slovenian expressions for the following:

- beverage
- gallon
- global consumption
- health-conscious

1.2 COLLOCATIONS



A collocation is two or more words that often go together. These combinations just sound *right* to native English speakers, who use them all the time. On the other hand, other combinations may be unnatural and just sound *wrong*.

Look at these examples:

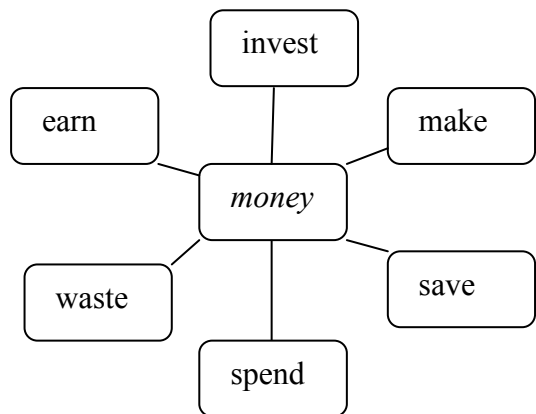
natural English	unnatural English
the fast train	the quick train
fast food	quick food
a quick meal	a fast meal
a quick shower	a fast shower

There are a lot of reasons why it is a good idea to learn collocations. Here are some:

- Your language will be more natural and more easily understood.
- You will have alternative and richer ways of expressing yourself.
- It is easier for our brains to remember and use language in chunks or blocks rather than as single words.

There are some different types of collocations. One of them is *verb + noun*. For example, an English speaker would say: “I’d like to have a drink,” and not “I’d like to ~~take~~ a drink.”

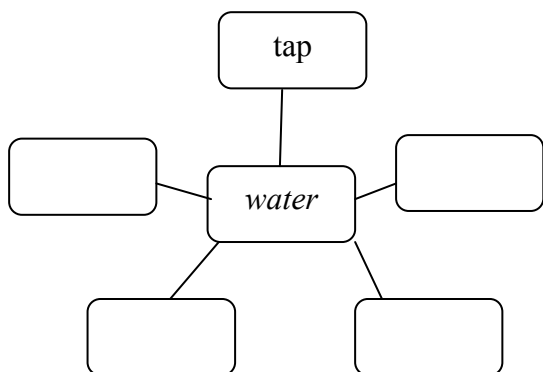
Another type is *noun + verb*. For example, the noun *money*, collocates with a lot of *verbs*:



(Adapted from: <http://blog.cellep.com/collocations-%E2%80%93-why-learn-them/>, 2 April, 2011)



Read the text *Bottled Water Isn't Healthier Than Tap* on page 5 again and find the *adjective + noun* collocations with the noun *water*.





Read the text *English for Specific Purposes* and answer the following questions:

- Why is ESP considered a *special kind* of English?
- In what way does ESP differ from General English?

English for Specific Purposes (ESP)

English for Specific Purposes (ESP) is a sphere of teaching English language including technical English, scientific English, English for medical professionals, English for waiters, and English for tourism. Aviation English as ESP is taught to pilots, air traffic controllers and civil aviation cadets who are going to use it in radio communications.

Definition of ESP

- ESP is defined to meet specific needs of the learners.
- ESP makes use of underlying methodology and activities of the discipline it serves.
- ESP is centred on the language appropriate to these activities in terms of grammar, register and study skills.
- ESP may be related to or designed for specific disciplines.
- ESP may use, in specific teaching situations, a different methodology from that of General English.
- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation.
- ESP is generally designed for intermediate or advanced students.
- Most ESP courses assume some basic knowledge of the language systems.

(Adapted from: http://en.wikipedia.org/wiki/English_for_specific_purposes, 21 May, 2010)



Read the text *English for Specific Purposes* again and find the Slovenian expressions for the following:

- adult learners
- intermediate students
- register
- tertiary level

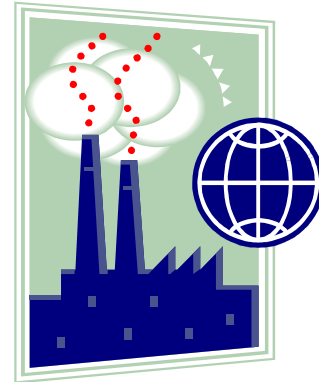


Read the text *Environmental Engineering* and find collocations that match the following descriptions:

<i>global warming</i>	an increase in the average temperature of the earth's atmosphere
	discarded material containing substances known to be toxic or otherwise dangerous to humans or other life-forms
	a slow, steady decline in the volume of ozone in Earth's stratosphere
	the act of getting rid of unwanted items and material having no value
	the collection, transport, processing and recycling of waste materials
	the quantity of available water
	the process of removing contaminants from household sewage, including physical, chemical, and biological processes to remove contaminants

Environmental Engineering

Environmental engineering is the application of science and engineering principles to improve the environment (air, water, and/or land resources), to provide healthy water, air, and land for human habitation and for other organisms, and to remediate polluted sites.



Environmental engineering involves water and air pollution control, recycling, waste disposal, and public health issues as well as knowledge of environmental engineering law. It also includes studies on the environmental impact of proposed construction projects.

Environmental engineers conduct hazardous-waste management studies to evaluate the significance of such hazards, advise on treatment and containment, and develop regulations to prevent mishaps. Environmental engineers also design municipal water supply and industrial wastewater treatment systems as well as address local and worldwide environmental issues such as the effects of acid rain, global warming, ozone depletion, water pollution and air pollution from automobile exhausts and industrial sources. At many universities, Environmental Engineering programs follow either the Department of Civil Engineering or The Department of Chemical Engineering at Engineering faculties. Environmental *civil* engineers focus on hydrology, water resources management, bioremediation, and water treatment plant design. Environmental *chemical* engineers, on the other hand, focus on environmental chemistry, advanced air and water treatment technologies and separation processes.

Additionally, engineers are more frequently obtaining specialized training in law and are utilizing their technical expertise in the practices of Environmental engineering law.

(Adapted from: http://en.wikipedia.org/wiki/Environmental_engineering, 2 June, 2010)



Read the text *Environmental Engineering* again and find the Slovenian expressions for the following:

- civil engineering
- exhaust
- expertise
- impact
- municipal
- remediate
- water treatment plant

1.3 ENVIRONMENTAL STUDIES



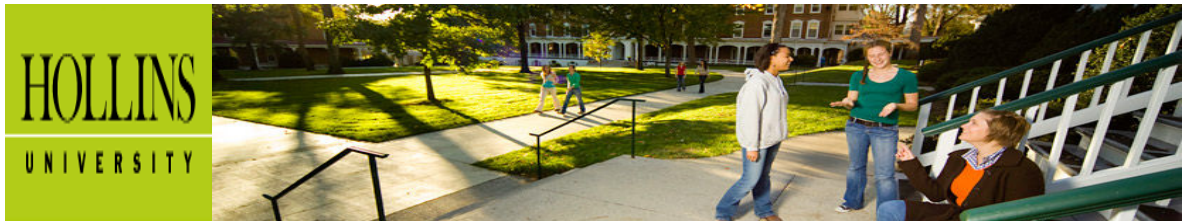
What, in your opinion, are environmental engineering and municipal science? Which skills and what knowledge does an environmentalist need? Discuss it with other students.

Your study programme is Environmental engineering and Municipal Science. Go through the curriculum in the text *Environmental Studies*, compare it to your curriculum and try to predict what you will learn and be able to do when you finish your studies.



Read the text *Environmental Studies* and try to find the words and expressions that refer to the following:

- skills & goal of the programme
- areas of study
- practical work



Environmental Studies

The field of environmental studies (ES) explores the relationship between humans and the environment. To fully understand the causes and consequences of environmental problems and to acquire skills for developing potential solutions requires an interdisciplinary approach that draws on the natural and social sciences and the humanities. The goal of the ES program is to provide students with a holistic understanding of environmental issues of local, national, and global importance.

The core courses offered in the ES major will ground all students in the study of the environment from scientific, cultural, historical, and societal perspectives. The broad distribution of elective courses will offer the ES major the opportunity to explore a wide range of interdisciplinary approaches to environmental concerns. In addition, a student may choose to focus on elective studies. For example, a student interested in environmental science may choose among elective courses in biology, chemistry, and economics, while a student interested in global environmental issues may choose elective courses in international studies, political science, and anthropology. The Hollins program is distinguished by its experiential component, which requires all majors to be involved in an internship or service project that pertains to their field of interest within the interdisciplinary approach of environmental studies.

Majors are also encouraged to explore career opportunities in the environmental field through internships and independent studies. During the academic year, interns may work with one of the many environmental organizations in the Roanoke Valley, while other students may elect to spend January short term interning in D.C., New York, or even in their own hometowns. Our students have also interned with the Virginia Department of Environmental Quality, The Nature Conservancy, The U.S. National Park Office, The National Zoo, and Save Our Bay Organization – to name a few.

Core Courses:

- Comparative Urbanism
- Conservation Biology
- Cultural Geography and Landscape Studies
- Ecology

- Economics
- Environmental Analysis
- Geography of Global Environment
- Statistical Methods
- The Nature and Culture of Water
- Cleaner Production and the Water Cycle Solid Waste Management
- Watershed Management
- Water and Environmental Law and Institutions

(Adapted from: <http://www.hollins.edu/undergrad/environmental/environmental.htm>, 18 December, 2008)



Read the text *Environmental Studies* again and find the Slovenian expressions for the following:

- acquire skills
- career opportunity
- core courses
- detract
- elective courses
- environmental issue
- evaluation
- field of interest
- holistic understanding
- interdisciplinary approach
- internship



Match the items on the right with the items on the left.

- | | | | |
|---|------------------------------------|---|--------------------------------------|
| 1 | Comparative Urbanism | A | Ekonomika podjetja in podjetništvo |
| 2 | Environment and Landscape Studies | B | Gospodarjenje z odpadki |
| 3 | Economics | C | Odvajanje in čiščenje odpadne vode |
| 4 | Environmental Law and Institutions | D | Oskrba z vodo |
| 5 | Solid Waste Management | E | Urbanizem |
| 6 | The Nature and Culture of Water | F | Urejanje podeželja in varstvo narave |
| 7 | Watershed Management | G | Varstvo okolja in zakonodaja |



Fill the gaps with the words given below. Each word is used only once.

collaboration
lectures

Engineering
Master

English
project

environmental
thesis

international
treatment

Environmental Engineering

In this programme you will study society's environmental concerns and learn how to prevent and solve ¹ *environmental* problems technically. You can take single courses or subjects within the programme or complete the entire master's degree programme and graduate as a ² _____ of Science in Engineering (MSc).



Name: Environmental ³ _____
 Type: University Programme
 Duration: 2 years
 European transfer credits: 120 ECTS
 Language: ⁴ _____

In the Environmental Engineering programme, you learn about environmental problems and about sustainable social developments both on a national and ⁵ _____ level. You will learn, for example, how to analyse and prepare projects that can solve environmental problems within, for example, drainage, water ⁶ _____ facilities, waste handling and water supplies.

Teaching varies between ⁷ _____ and classroom instruction. In addition, there is often ⁸ _____ work together with other students. Students are encouraged to participate in class discussions.

The final 6 months you will be writing your MSc ⁹ _____. The thesis is a scientific research project, often carried out in ¹⁰ _____ with one of the university's industrial partners.

(Adapted from: <http://studyindenmark.dk/study-programmes/programmes-in-english/environmental-engineering>, 3 June, 2010)

1.4 A PROFILE



Read the profile of Ian MacNair and then set up another profile about yourself. Use the topics below to help you. Then introduce yourself to other students.

name home town company position responsibilities hobbies

A profile

My name is Ian MacNair and I'm Scottish. I live in Kirkcaldy, a small town about 18 km from Edinburgh.

I work for the Berry Marine Cosultants. Our main services are: environmental management relating to coastal and offshore environments, impact assessment, education and journalism and media service relating to marine environmental issues, including oil and gas activities.



I work at Edinburgh head office: I'm head of Corporate Finance, and I'm responsible for developing the business of the company.

I'm always very busy and I don't have much free time, but when I do, I like skiing and sailing, just for fun.

Summary

ESP is about learning English for specific purposes, i.e. for functional use of language in practice. For the purposes of an Environmental Engineer, one should be able to read and understand professional texts, to elicit important information and to present professional issues to the colleagues. For this reason, one should be able to manage new methods of learning for the purpose of lifelong learning, acquire certain skills and expand the vocabulary.

Environmental science encompasses issues such as climate change, conservation, water quality, groundwater contamination, soil contamination, of natural resources, waste management, sustainable development and air pollution.

In order to choose the appropriate study programme it is good to know where to find information about the study programmes and how to apply.

Revision



Write why you think you should learn English for specific purposes.



What do you think your line of study/work will be about? Write down your own opinion in about 100 words.



You would like to study Environmental Science at the New Jersey Institute of Technology, US. You have found the “Request Information” section on their website and you would like them to send you a brochure, accommodation costs and price of the study programme. Fill in the form below.

New Jersey Institute of Technology



NJIT is New Jersey's Science and Technology University. Today, our six schools and colleges enrol more than 8,200 students in 33 bachelors, 40 masters and 19 doctoral degree programs.

Table 1: Request Information

Program of Interest:	Graduate Certificate – Environmental Sustainability
Country:	
First Name:	
Last Name:	
Address:	
City:	
E-mail:	
Phone:	
Intended Start Semester: <i>(tick the relevant)</i>	Fall 2011 Spring 2012
Education Level: <i>(tick the relevant)</i>	Bachelors Degree Masters Degree Doctoral Degree
Comments or Inquiry:	

Source: <http://forms.elearners.com/njit.html?=&> (2 June, 2010)

2 ENTERPRISE

After this unit you will be able to:

- discuss the division and differences among individual economic sectors;
- discuss public services in English;
- present an organisational structure of a company;
- present your profession;
- read and write business letters in English.



What is an enterprise? What kinds of companies do you know? What departments are there in a company? Which department do you work in? Discuss the questions with other students.

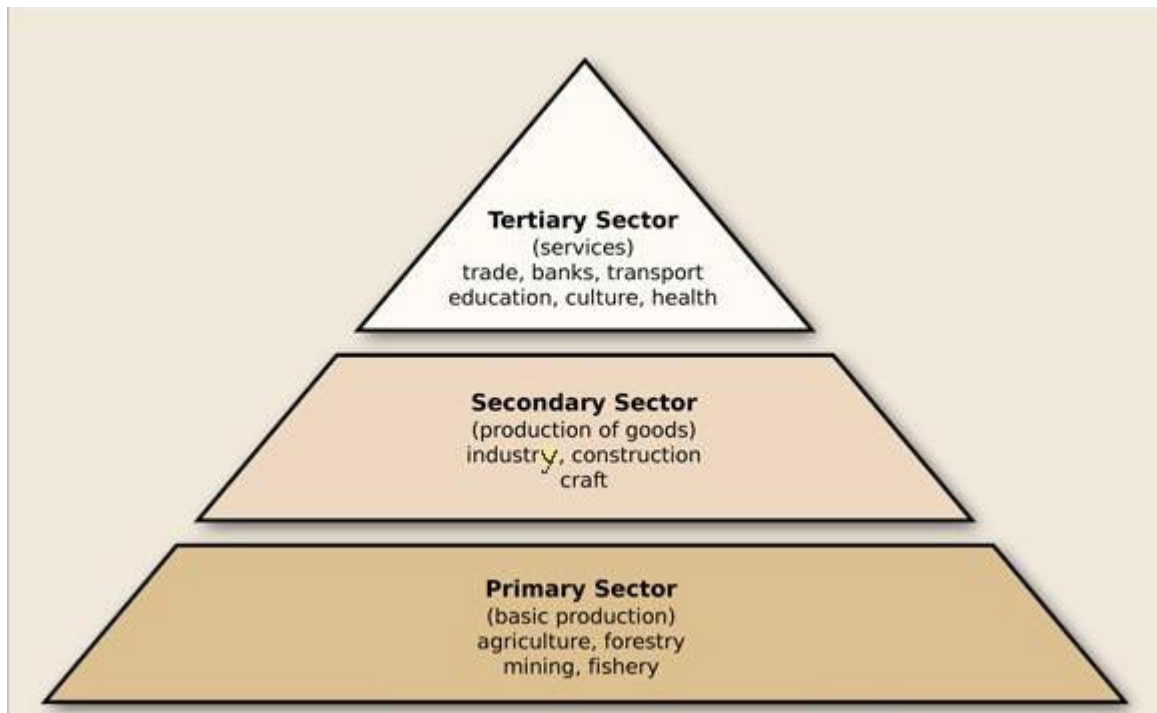
2.1 ECONOMIC SECTORS



Read the text *Economic Sectors* and answer the following questions:

- What is the primary sector?
- What is the secondary sector?
- What is the tertiary sector?

Countries with higher levels of socio-economic development tend to have less of their economy made up of primary and secondary sectors and more emphasis in tertiary sectors. The less developed countries exhibit the inverse pattern.



Picture 1: Economic Sectors

Source: <http://www.regionalentwicklung.de> (26 March 2011)

In modern economies, there are three main sectors of economic activity:

- *Primary sector* of the economy involves the extraction and production of raw materials, such as corn, coal, wood and iron. (A coal miner and a fisherman would be workers in the primary sector.)
- *Secondary sector* of the economy involves the transformation of raw or intermediate materials into goods, e. g. manufacturing steel into cars, or textiles into clothing. (A builder and a dressmaker would be workers in the secondary sector.)
- *Tertiary sector* of the economy involves the provision of services to consumers and businesses, such as baby-sitting, cinema and banking. (A shopkeeper and an accountant would be workers in the tertiary sector.)

(Adapted from: http://en.wikipedia.org/wiki/Sector_%28economic%29, 3 June, 2010)



Read the text *Economic Sectors* again and find the Slovenian expressions for the following:

- conversion
- development
- economy
- extraction
- income
- inverse pattern
- manufacture



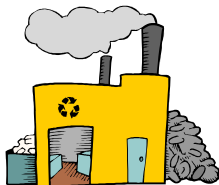
Primary, secondary or tertiary sector? Look at the pictures and do the following:

- name the industry;
- place it into the primary, secondary or tertiary economic sector;
- name their products.

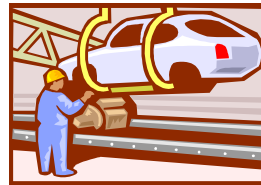


















Service



What is service? What do public services involve? Discuss the questions with other students.



Read the text *Public Services* and answer the following questions:

- What is public service?
- What job can you get if you study public services?
- When did the provision of public services develop?
- What is the difference between the developed and non-developed countries?
- Make a list of public services mentioned in the text.

Public Services

Public services is a term usually used to mean services provided by government to its citizens, either directly through the public sector or by financing private provision of services.

The term is associated with a social consensus that certain services should be available to all, regardless of income. Even where public services are neither publicly provided nor publicly financed, for social and political reasons they are usually subject to regulation going beyond that applying to most economic sectors.



Public services is also a course that can be studied at college and/or university. These courses can lead entry into the police, ambulance and fire services. It is also an alternative term for civil service.

Public service tend to be those considered so essential to modern life that for moral reasons their universal provision should be guaranteed, and they may be associated with fundamental human rights (such as the right to water).

A service is helping others with a specific need or want. Service ranges from a doctor curing an illness to a repair man. All of these services are important in people's lives.

Historically, the widespread provision of public services in developed countries usually began in the late nineteenth century, often with the municipal development of gas and water services. Later, other services such as electricity and healthcare began to be provided by governments. In most developed countries such services are still provided by local or national government.

In developing countries public services tend to be much less well developed. Water services, for example, may only be available to the wealthy middle class. For political reasons the service is often subsidised, which reduces the finance available for expansion to poorer communities. (Adapted from: http://en.wikipedia.org/wiki/Public_services, 3 June, 2010)



Read the text *Public Services* again and find the Slovenian expressions for: civil service, healthcare, human rights, municipal and subsidise.

2.2 COMPANY ORGANISATION



Look at the pictures. Which departments of a company do they represent?



A visitor is on a tour of a company. Read about the nine departments and match the pictures with four of the paragraphs. Then underline the names of all the departments.

1. OK, let's start here, in research and development, or R&D. This department is responsible for thinking of ideas for new products and finding ways to improve our existing products.
2. This department looks after our computer equipment. They deal with any problems. This is information technology or IT.
3. Purchasing buys all the things we need to make our products. They talk to our suppliers and try to get the best price.
4. This is the main factory area, the production department. Here we make our products. It's the biggest part of the company.
5. Here in the finance department, they check how much the company is making and decide how much to spend. They also pay employees' salaries.
6. This department looks after the people who work here. Human resources is responsible for recruiting new employees, organizing training and helping with any problems.
7. Sales and marketing is very important. The marketing people think up the ideas for selling our products. The sales people go out and sell our products to our customers.
8. Customer services processes orders from customers. It organizes transportation, checks that customers have received their orders and deals with complaints.
9. Finally, distribution is responsible for transporting our products. They receive orders from customer services, and plan how and when to transport the products so the customers receive them at the right time. (Wood, 2003, 4)



Match the items on the right with the items on the left.

- | | |
|---------------------------|--------------------------------------|
| 1. Sales and marketing | a. transports the products. |
| 2. Information technology | b. pays the salaries. |
| 3. Customer services | c. sells the products. |
| 4. Human resources | d. makes the products. |
| 5. Purchasing | e. looks after the computers. |
| 6. Production | f. thinks of ideas for new products. |
| 7. R&D | g. recruits new staff. |
| 8. Finance | h. processes orders from customers. |
| 9. Distribution | i. buys parts from suppliers. |
- (Wood, 2003, 4)



Work in pairs to test each other. Take turns to ask questions about the different departments. E.g.: *Which department pays the salaries?*



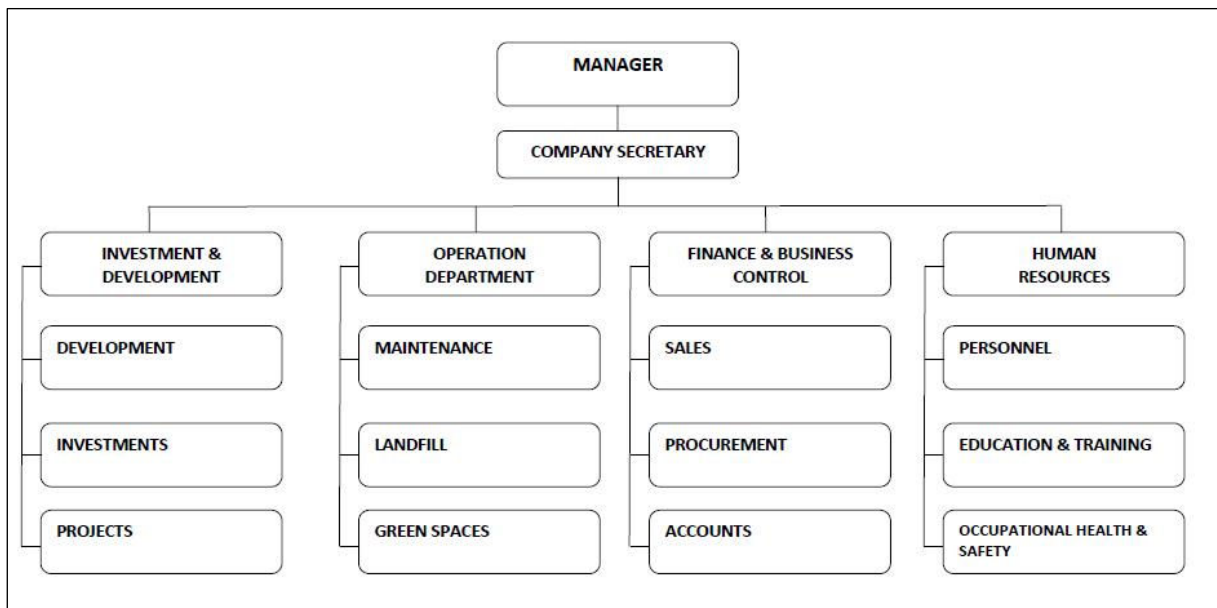
Match the items on the right with the items on the left.

- | | |
|-------------------------------------|-------------------------|
| 1. Oddelek za izobraževanje | a. Accounts |
| 2. Odvetniška pisarna | b. Company Secretary |
| 3. Služba za finance | c. Development Strategy |
| 4. Služba za kadre | d. Education & Training |
| 5. Služba za obračun prihodkov | e. Finance |
| 6. Služba za računovodstvo | f. Income |
| 7. Služba za realizacijo investicij | g. Investments |
| 8. Stiki z javnostjo | h. Law Office |
| 9. Strategija in razvoj | i. Personnel |
| 10. Tajništvo direktorja | j. Public Relations |



Look at the organigram of a company and answer the following questions:

- What is the line of business of the company?
- How many departments are there?
- Does the company provide continuous education for its employees?
- Discuss the duties and responsibilities of the sectors.



Picture 2: Organigram of a Company

Source: Author's own



Read the text *Nalco Company* and answer the following questions:

- What is the company's line of business?
- How many employees does it have?
- How many countries are they present in?



Nalco Company

Nalco Company is the world's leading water treatment and process improvement company, delivering significant environmental, social and economic performance benefits to a variety of industrial and institutional customers. Our programs and services are used in water treatment applications to prevent corrosion, contamination and the build-up of harmful deposits and in production processes to enhance process efficiency, extend asset life, improve our customers' end products, and enhance air quality. We help our customers reduce energy, water and other natural resource consumption. Together our comprehensive solutions contribute to the sustainable development of customer operations.

Through our sales, service, research and marketing team of more than 7,000 technically trained professionals, we serve more than 70,000 customer locations in more than 130 countries. We focus on providing our customers with sustainable, technologically advanced, engineered solutions and services.

Our Energy Services division provides on-site, technology-driven solutions to the global natural gas, petroleum and petrochemical industries. In addition to recovery, production and process enhancements, we also deliver a full range of water treatment offerings to refineries and petrochemical plants.

The division is divided into a downstream refinery and petrochemical processing service business, and an upstream group composed of our Oilfield Chemicals and Adomite business. Our upstream process applications improve oil and gas recovery and production, extend production equipment life and decrease operating costs through services including scale, paraffin and corrosion control, oil and water separation, and gas hydrate management solutions. Our downstream process applications increase refinery and petrochemical plant efficiency and the useful life of customer assets, while improving refined and petrochemical product quality and yields. (Adapted from: <http://www.nalco.com/about.htm>, 21 November, 2010)



Read the text *Nalco Company* again and find the Slovenian expressions for the following:

- application
- consumption
- deposit
- enhance
- recovery
- sustainable
- yield



Read the text *Nalco Company* again and find the expressions with the word *solutions*

_____ solutions
 _____, _____, _____ solutions
 _____, _____ solutions
 _____ solutions

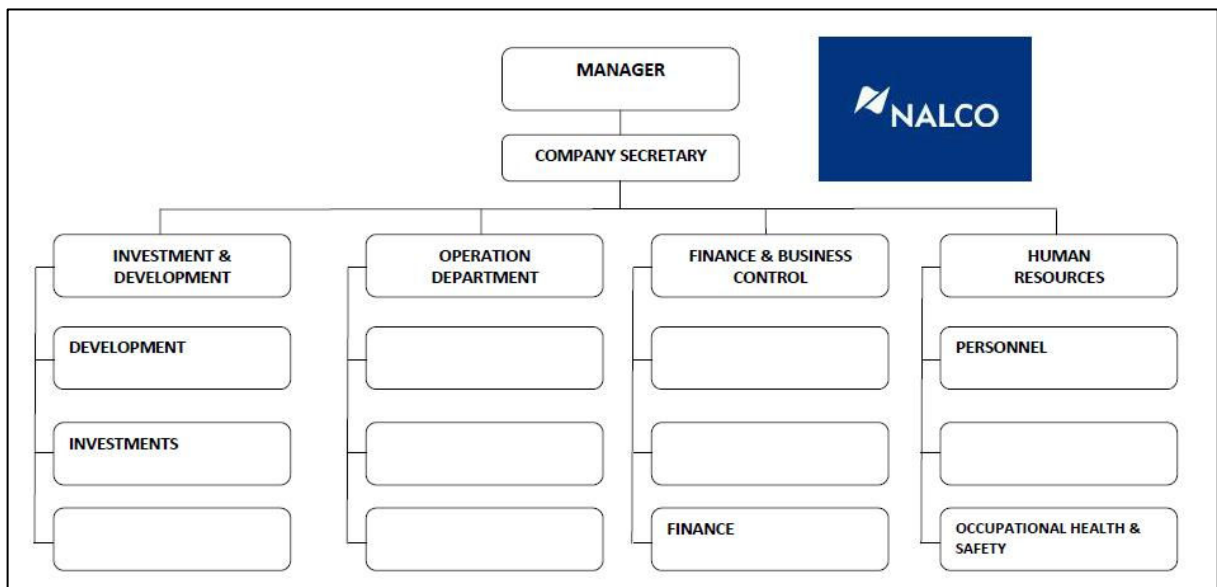


In the text *Nalco Company*, find the words that belong to the same word family and complete the table.

<i>noun</i>	<i>adjective</i>
	corrosive
economy	
	efficient
environment	
industry	
	various



Read the text *Nalco Company* again and try to complete the organigram below.



Picture 3: Organigram of Nalco
 Source: Author's own

2.3 PROFESSIONS



Tick the activities you like. Then interview your partner about their learning objectives. Write down his/her answers.

Do you like ...

- dealing with the public?
- having responsibility?

- making decisions?
- making things?
- meeting people?
- selling?
- travelling?
- working in a team?
- working with numbers?
- working with machines?

Now try to find the appropriate job for your partner (computer programmer, salesperson, accountant, managing director, engineer, secretary, designer, ...). Present your decision to other students.

Job Description



Read the text *Environmental Engineers* and fill the gaps with the following subtitles:

- a *Financial conditions*
- b *Social environment and skills*
- c *Duties and methods of work*
- d *Future prospects*

Environmental Engineers

Environmental engineers use the principles of biology and chemistry to develop solutions to environmental problems. They are involved in water and air pollution control, recycling, waste disposal, and public health issues. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of the hazard, advise on its treatment and containment, and develop regulations to prevent mishaps. They design municipal water supply and industrial wastewater treatment systems, conduct research on the environmental impact of proposed construction projects, analyze scientific data, and perform quality-control checks. Environmental engineers are concerned with local and worldwide environmental issues. Some may study and attempt to minimize the effects of acid rain, global warming, automobile emissions, and ozone depletion. They also may be involved in the protection of wildlife. Many environmental engineers work as consultants, helping their clients to comply with regulations, prevent environmental damage, and clean up hazardous sites.

Environmental engineers should be creative, inquisitive, analytical, and detail oriented. They should be able to work as part of a team and to communicate well, both orally and in writing. Communication abilities are becoming increasingly important as engineers interact more frequently with specialists in a wide range of fields outside environmental engineering.

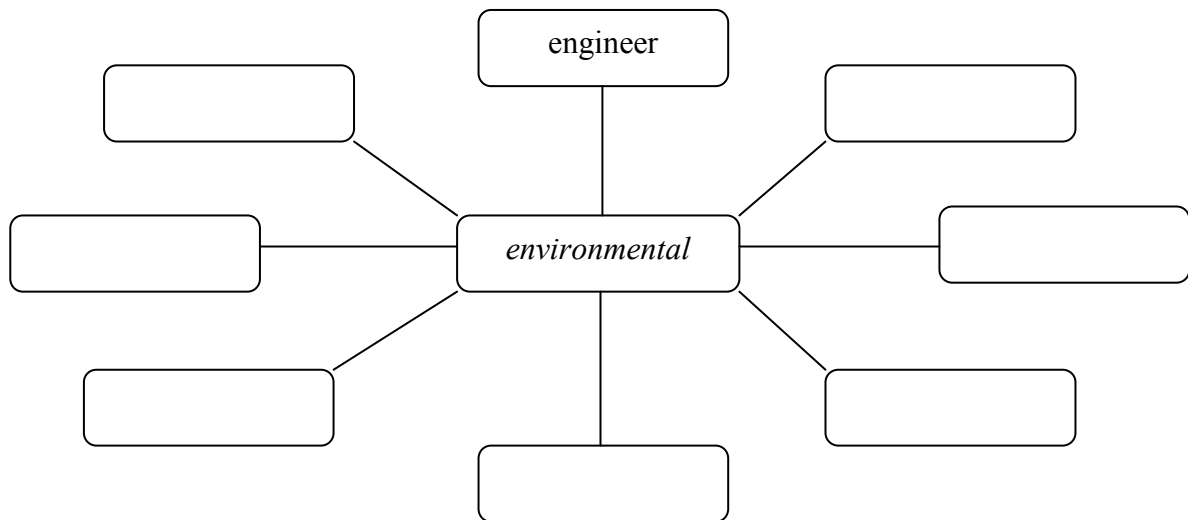
Environmental engineers are expected to have employment growth of 31 percent over the projections decade, much faster than the average for all occupations. More environmental engineers will be needed to help companies comply with environmental regulations and to develop methods of cleaning up environmental hazards. A shift in emphasis toward preventing problems rather than controlling those which already exist, as well as increasing

public health concerns resulting from population growth, also are expected to spur demand for environmental engineers. Because of this employment growth, job opportunities should be favorable.

Earnings for environmental engineers vary significantly by specialty and level of responsibility. Median annual earnings of environmental engineers in 2008 were \$ 74,020. The middle 50 percent earned between \$ 56,980 and \$ 115,430. (Adapted from: <http://www.bls.gov/oco/ocos027.htm>, 20 August, 2010)



In the text *Environmental Engineers*, find collocations with the adjective *environmental*.



Read the text *Environmental Engineers* and discuss the following:

- What does an environmental engineer do?
- Which professional skills and personal qualities are required for the job?
- How much does an environmental engineer earn?

Job advertisements



Look at the job advertisements. Which one would interest you?

Municipal contract manager

We are a global environmental services company renowned for our integrated waste management and environmental services to local communities and industry, providing a range of services including refuse collection, recycling, waste treatment, and street cleansing services to over 6 million customers in the UK.

An opportunity has arisen for a Contract Manager to join one of the contracts to lead a team of around 50 people and manage all aspects of the contract operation, across refuse, recycling, and facility maintenance. Working closely with the client you will ensure the contract levels of profitability, assisting in the preparation of the contracts and budget.

Ideally you will come from a municipal waste management background at a Contract Manager or Operations Manager level. This is key role working directly with the client therefore excellent communication and negotiation skills as essential. You will need to identify and record training needs for your team as well as implement and maintain procedures to ensure the contract runs in a cost effective and efficient manner. Annual payment: £ 38,000–£ 45,000, car, bonus

Apply to:
 Jeremy Stokes
 WASREC
 21 Churchill Way
 Basingstoke RG21

Solid waste engineer
Landfill gas

Forth & Van Dyke, a nationally recognized engineering consulting firm is searching for a Landfill Gas Engineer to join its Infrastructure & Environment team in Green Bay, WI.

Qualified candidates will possess a College Degree in Environmental, or Civil Engineering with minimum 3 years of experience in landfill gas (LFG) engineering. Experience in recovery, control, gas migration is required. Responsible for preparing LFG system layouts and design, design computations, direct the development of design drawings and specifications, and produce technical reports and system construction estimates for material and cost take-offs.

The position requires the supervision of the installation of LFG probes, wells, and extraction and flaring systems. The candidate will have a working knowledge of compliance with new source performance standards for air emissions. The position requires a strong knowledge of regulatory issues needed to work with state and local agencies. Submit your resume in confidence to:

Forth & Van Dyke,
 Darla Myers,
 2737 S. Ridge Road,
 Greenway WI 54304



Read the advertisements again. Make notes on:

	advertisement 1	advertisement 2
job title		
type of firm		
tasks involved		
salary & other benefits		
professional skills and personal qualities required for the job		



Fill the gaps in the text with the words given.

benefits communications customer Engineer environmental
essential experience holiday payment responsibility

Alquest Technical Services Ltd
is looking for
Logistics Facilities Engineer

We supply nationwide small builder's routine kitchen and joinery requirements. We serve 234,000 registered customers from over 450 depots across the UK. We are actively developing the business around the needs of our ¹customer and partner – the local builder.

The Logistics Facilities ² _____/Group Leader Level will be based in Northampton with ³ _____ for the daily maintenance organisation and legal compliance inspections of large buildings.

A successful candidate will have effective operational ⁴ _____ good understanding of technical and ⁵ _____ legislation, effective planning and project management and good ⁶ _____ skills. Knowledge of English is ⁷ _____

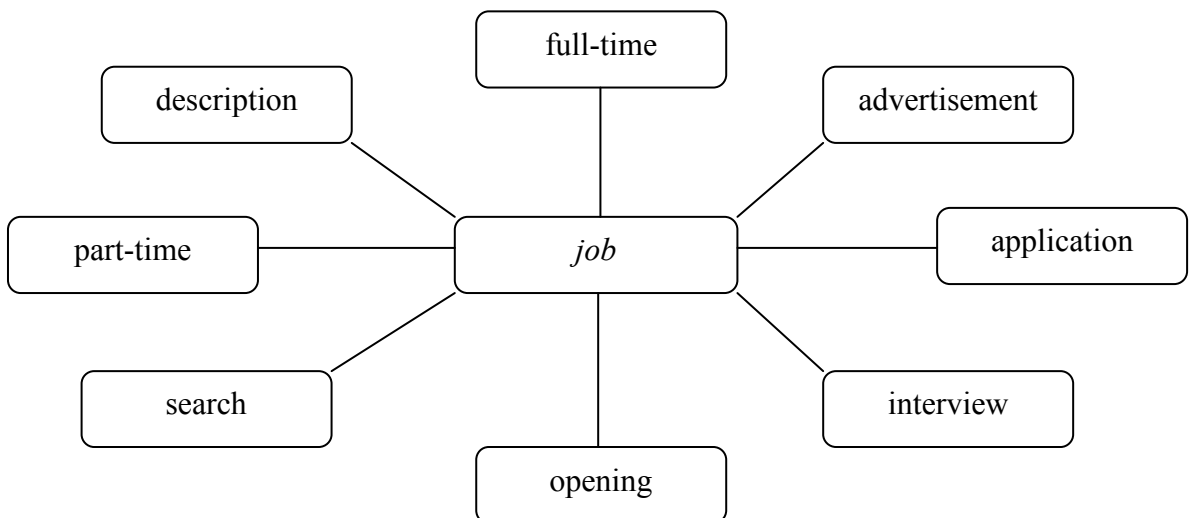
Annual ⁸ _____ will range from £ 35,000 – 40,000, ⁹ _____ include life insurance, a dental program, 21 days ¹⁰ _____ pay.

Application and CV to be sent to:
Alquest Technical Services
9 Billington Road
Bedfordshire LU7, UK

(Adapted from: <http://www.jimfinder.com/job-details/304632/Logistics-Facilities-Engineer-and-Group-Leader-level.aspx?source=clickajob>, 9 December, 2008)



Look at the collocations with the word *job* and describe the process of getting a job.





Use a dictionary and write other expressions with the same meaning:

- job: _____, _____, _____
- salary: _____, _____
- worker: _____, _____

2.4 WRITING LETTERS

When writing letters you need to think about:

- letter layout
- salutation and complimentary close
- contents, or main body of the letter

Letter Layout

Look at the letters below and answer the following questions:

- What can you notice about the layout of the paragraphs?
- Is there any punctuation in the addresses?
- What differences are there between the two letters?

A

B

<p style="text-align: center;">Bedgrade 51 Copenhagen 1260 DENMARK</p> <p style="text-align: center;">30 Nov 2010</p> <p>Compuvision Ltd. Warwick House Forest Hill London SE23</p> <p>Dear Sir or Madam</p> <p>Please would you send me details of your DVD video systems?</p> <p>I am particularly interested in the Omega range.</p> <p>I look forward to your reply.</p> <p>Yours faithfully</p> <p><i>B. Kaasen</i></p> <p>Bridget Kaasen</p>	<p style="text-align: right;"><i>Compuvision Ltd.</i> Warwick House Forest Hill London SE23</p> <p style="text-align: right;">10 Dec 2010</p> <p>Ms B. Kaasen Bedgrade 51 Copenhagen 1260 DENMARK</p> <p>Dear Ms Kaasen,</p> <p>Thank you for your enquiry.</p> <p>I enclose our catalogue and price-list for DVD video equipment. You will find full details of the Omega range on pages 15–17.</p> <p>Please contact us if you have any further questions or would like to place an order.</p> <p>We look forward to hearing from you.</p> <p>Yours sincerely, <i>M. Raynor</i> Mary Raynor Sales Manager</p> <p>Enc. Catalogue, Price-list</p>
--	---

Salutations and Complimentary Close



Match the items on the right with the items on the left.

- | | |
|---------------------|--|
| 1 Dear Sir or Madam | to a friend or someone you know well |
| 2 Dear Sir | to an unmarried woman |
| 3 Dear Madam | to a married woman |
| 4 Dear Mr Smith | to a married or unmarried woman |
| 5 Dear Mrs Smith | to a man |
| 6 Dear Ms Smith | to a woman if you do not know her name |
| 7 Dear Miss Smith | to a man if you do not know his name |
| 8 Dear John | to a company |



The way you close the letter depends on how you open it. Match the items on the right with the items on the left.

- | | |
|-------------------|------------------|
| 1 Dear Mrs Wilson | |
| 2 Dear Madam | Yours faithfully |
| 3 Dear Ms Roberts | Best wishes |
| 4 Dear Ann | Yours sincerely |
| 5 Dear Sirs | |



Body of the Letter

Below are some sentences taken from various letters. Match the sentences with the types of letters.

- | Sentences | Types of letters |
|--|--|
| a. I am writing to apologise for not sending you all the information you requested. | 1. asking for information (enquiry) |
| b. As requested, I am sending you all the relevant information. | 2. ordering items |
| c. Unfortunately, we have not received the filing cabinets. We would appreciate it if you could deliver them soon. | 3. apologising |
| d. I would really be grateful if you could send me details of courses you offer. | 4. making a complaint |
| e. Please find enclosed our official order for filing cabinets, No. DR4316. | 5. giving information (reply to enquiry) |



Read the letter of application for a job and fill the gaps with the words given below.

Certificate
graduated

communicative
interview

competent
skills

experience
tasks

63 Kingsborough Rd.
Birmingham B4 7XG
2nd April 2011

The Office Manager
PO Box 143
Sumner Park QLD 4074

Dear Sir or Madam

I am applying for the position of Trades Assistant, which was advertised in *The Courier Mail* on 29th March 2011.

My name is Benjamin Craig and I ¹ *graduated* from the College of Mechanical Engineering. I have over 7 years ² _____ working as a Trades Assistant for a steel-manufacturing organisation. In this position, I performed such ³ _____ as oxy-welding and assisting the tradesmen with all of their duties. I have also successfully completed a ⁴ _____ in Welding.

In all of my previous employment positions I have been required to work unsupervised and I am ⁵ _____ in the use of power and hand tools. My work history shows that I can perform any tasks in this area of employment as is requested of me.

Since the beginning of my working career I have gained many ⁶ _____ in the area of customer service and feel that I would be a valuable asset to your organisation. I am a reliable and ⁷ _____ person and am used to working in team.

I enclose my CV. I look forward to hearing from you soon. I can be contacted at any time for an ⁸ _____ on 333 3333 33.

Yours faithfully,
Benjamin Craig
Benjamin Craig

Summary

The economy may be classified into subdivisions called sectors; according to the production chain there are three broad sectors in modern economy: the primary sector, secondary sector and tertiary sector which provides services to consumers and businesses.

Public services are services provided by government to its citizens. The widespread provision of public services in developed countries usually began in the late nineteenth century, often with the municipal development of gas and water services.

In this unit we dealt with organisation of a company with its departments and sectors and their functions. We also discussed professions, employment and the form of business letters.

Revision



Which company do you work for? What is its line of business? Think about the departments and sections in your company and draw an organigram.



Follow the example of the job description of Environmental engineers on page 20 and write a description of your job in 150 words and 4 paragraphs. Include information about the duties and methods of work, skills and social environment, future prospects and financial condition.



Imagine you work in the Human Resources Department of a manufacturing company. Give a short talk to some new employees. Decide what the company makes, e.g. bicycles, computers. Prepare the talk for some new employees. Explain what each department does. Don't write every word – just make notes. Give your talk to some other students.



Reply to a job application letter. Yesterday, you interviewed two people for a job in your company. Write two short letters, one to the person who got the job and the other to the person who did not get it, telling them your decision. Invent any details you need.



Reply to a complaint. You work for the Gas Supply Company. You have just received a letter from a customer who claims that the gas bill he received was too high. The personnel working at your office was extremely unfriendly, and they wouldn't let her speak to the manager. Write a letter apologising and asking for further information so that you can arrange compensation. Invent any detail you need.



What's Your Ideal Career? Complete the questionnaire and try to decide what your ideal profession would be.

1. You tend to enjoy:

- studying/solving math or science problems.
- working with animals, tools, or machines.
- creative activities like art, drama, crafts, dance, music, or fiction writing.
- working with numbers, records, or machines in a set, orderly way.
- leading and persuading people, as well as selling products and ideas.
- doing things to help people such as teaching or providing information.

2. On the other hand, you tend to avoid:

- ambiguous, unstructured activities.
- social activities that involve teaching, healing, or informing others.
- repetitive or highly ordered activities.
- leading, selling, or persuading people.

- using machines or tools to achieve a goal.
- activities that require careful observation and scientific, analytical thinking.

3. You are best at:

- mechanical things and working with new tools.
- getting your head around a bunch of numbers and facts at once.
- inspiring people and getting them to see things your way.
- understanding complex math and science problems.
- using your natural artistic abilities.
- counselling or explaining things to people.

4. You see yourself as:

- precise, scientific, and intellectual.
- practical, mechanical, and realistic.
- expressive, original, and independent.
- orderly and good at following a set plan.
- energetic, ambitious, and sociable.
- helpful, friendly, and trustworthy.

(Adapted from: <http://www.blogthings.com/idealcareerquiz/>, 20 August, 2010)

3 ECOLOGY

After this unit you will be able to:

- speak about natural resources and their conservation;
- discuss global warming and sustainability;
- define and describe alternative sources of energy;
- use new vocabulary structures to improve your professional terminology;
- use appropriate business English for meeting a business partner;
- describe how an engine works.



What is ecology? What environmental impact does the mankind inflict upon our planet? How can we protect the natural environment? Discuss the issues with other students.



Read the text *Consumption of Resources Outstripping Planet's Ability to Cope* and answer the following questions:

- Is the level of consumption of fossil fuels equivalent to what the earth can produce?
- Find three examples of fossil fuel.
- What is included in measuring the *person's footprint*?
- Which countries make the biggest impact on the world's resources?
- What can people do to spare the world's resources?

Consumption of Resources Outstripping Planet's Ability to Cope

People are plundering the world's resources at a pace that outstrips the planet's capacity to sustain life.



In its regular Living Planet Report, the World Wide Fund for Nature said humans currently consume 20 % more natural resources than the earth can produce. Consumption of fossil fuels such as coal, gas and oil increased by almost 700 % in the last 40 years. But the planet is unable to move as fast to absorb the resulting carbon-dioxide emissions that degrade the earth's protective ozone layer.

»The question is how the world's entire population live with the resources of one planet,« said Jonathan Loh, one of the report's authors.

The study examines the *ecological footprint* – or environmental impact – of the planet's 6,1 billion-strong population. To calculate the average size of each person's footprint, it measures land use, pollution, energy consumption, and the level of carbon-dioxide emissions.

Overall, the biggest culprits are the residents of the United Arab Emirates, followed by the United States. The least-damaging are residents of Afghanistan, Somalia and Haiti.

»We can consume energy in a way that's harmful or in a way that's sustainable,« Loh told reporters. »The technologies are available to enable the world's population to live within the capacity of one planet. Governments, businesses and consumers should switch to energy efficient technology, such as solar power, and high oil prices may help focus their minds.«

»It's not a question of how much oil is left,« he said. »The question we should be asking is how much fossil fuel consumption the earth can sustain. The earth has a limited capacity.«
(Adapted from: <http://www.commondreams.org/headlines04/1021-02.htm>, 26 March, 2011)



Read the text *Consumption of Resources Outstripping Planet's Ability to Cope* again and find the Slovenian expressions for the following:

- carbon-dioxide emissions
- consumption of fossil fuels
- culprit
- energy efficient technology
- environmental impact
- natural resource
- ozone layer

3.1 GLOBAL WARMING



What is global warming? What causes it? What are the effects of global warming?



Read the text *Ozone Recovery May Take Longer Than Expected* and fill the gaps with the words given below.

analysis
levels

effects
refrigerators

harmful
sprays

hole
square

Ozone Recovery May Take Longer Than Expected

The eventual recovery of the ozone over Antarctica, where a ¹ hole was first discovered two decades ago, may take years longer than previously predicted, scientists reported Tuesday.



Researchers suspect that's because of all the older model ² _____ and car air-conditioning systems in the United States and Canada that are still releasing ozone-killing chemicals. Both countries curbed those chemicals in newer products.

If scientists are right, that means longer-term exposure to ³ _____ ultraviolet radiation, which raises the risk of skin cancer and cataracts for people. Long-term UV exposure is bad for the biodiversity of the planet too.

Since the discovery of the ozone hole over the South Pole in the 1980s, satellites and ground stations have been monitoring it. Current computer models suggest the ozone hole should recover globally by 2040 or 2050, but Tuesday's ⁴ _____ suggests the hole won't heal until about 2065.

Results were presented at an American Geophysical Union meeting in San Francisco. »From a human perspective, it's a little dismaying because this means there's still going to be higher

⁵ _____ of UV,« said Paul Newman, an atmospheric scientist with the NASA Goddard Space Flight Centre.

Measurements of ozone depletion vary every year, making it hard for scientists to predict the long-term ⁶ _____ of changes and how it may affect recovery.

The size of this year's Antarctic ozone hole rivalled the all-time biggest hole detected in 2003. In September, the hole over the South Pole peaked at about 10 million square miles, or the size of North America. That was a notch below the 2003 record size of about 11 million ⁷ _____ miles.

Chlorofluorocarbons, or CFCs, in refrigerants, aerosol ⁸ _____ and solvents have been largely blamed for most ozone depletion.

(Adapted from: <http://msnbc.msn.com/id/10351981/#storyContinued>, 7 December, 2010)



Read the text *Ozone Recovery May Take Longer Than Expected* again and answer the following questions:

- When was the hole in the ozone layer first discovered over Antarctica?
- What are the consequences of long-term exposure to ultraviolet rays?
- What are the new estimations for the recovery of the ozone hole?



Read the text *Ozone Recovery May Take Longer than Expected* again and find the Slovenian expressions for the following:

- cataract
- curb
- depletion
- exposure
- ozone layer
- recovery
- refrigerator
- solvent

3.2 WORDFORMATION



Wordformation is a process of forming new words. There are various ways of making new words in English (compounding, conversion and derivation). Here we will deal with derivation.

Derivation is a way of making new words by adding a prefix or a suffix to the root of the word.

Example:

un-	employ	-ment
prefix	root word	suffix

In this way we can form:

- adjectives (e.g. hope-ful),

- nouns (e.g. organis(e)-ation),
- verbs (e.g. critic-ize) or
- adverbs (e.g. final-ly).

A good dictionary is a must here. It is impossible to learn all the derivatives by heart but practice can help.



Read the text *Environmental Science* and fill in the gaps with the correct form of the word in brackets.

Environmental Science

Environmental science is an expression encompassing the wide range of scientific disciplines that need to be brought together to understand and manage the natural environment and the many interactions among physical, ¹*chemical* (chemistry), and biological components. Environmental Science provides an integrated, quantitative, and interdisciplinary approach to the study of ²_____ (environment) systems.

Since most environmental issues deal with human activities, study of economics, law and social sciences are often applied in conjunction with Environmental Science.

Environmental science encompasses issues such as climate change, conservation, biodiversity, water quality, groundwater ³_____ (contaminate), soil contamination, use of natural resources, waste ⁴_____ (manage), sustainable development, disaster reduction, air ⁵_____ (pollute), and noise pollution.

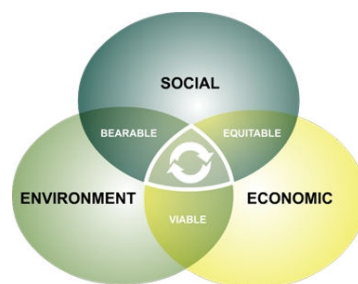
(Adapted from: http://en.wikipedia.org/wiki/Environmental_science, 21 May, 2010)



Read the text *Sustainability* and fill in the gaps with the correct form of the word in brackets.

Sustainability

Sustainability is the capacity to endure. In ecology, the word describes how biological systems remain diverse and ¹_____ (produce) over time. Long-lived and healthy wetlands and forests are examples of sustainable ²_____ (biology) systems. For humans, sustainability is the potential for long-term maintenance of well being, which has ³_____ (environment), economic, and social dimensions.



Healthy ecosystems and environments provide vital goods and services to humans and other organisms. There are two major ways of reducing negative human impact and enhancing ecosystem services. The first is environmental ⁴_____ (manage); this approach is based largely on information gained from earth science, environmental science, and conservation biology. The second approach is management of human ⁵_____ (consume) of resources, which is based largely on ⁶_____ (inform) gained from economics.

Sustainability interfaces with economics through the social and ecological consequences of economic activity. Sustainability economics involves ecological economics where social,

cultural, health-related and financial aspects are integrated. Moving towards sustainability is also a social challenge that entails international and ⁷ _____ (nation) law, urban planning and transport, local and individual lifestyles and ethical consumerism. Ways of living more ⁸ _____ (sustain) can take many forms from reorganising living conditions (e.g. eco-municipalities and sustainable cities), reappraising economic sectors (green building, sustainable agriculture), or work practices (sustainable architecture), using science to develop new technologies (green technologies, renewable energy), to adjustments in individual lifestyles that conserve natural resources.

(Adapted from: <http://en.wikipedia.org/wiki/Sustainability>, 18 March, 2011)

3.3 ALTERNATIVE FUELS

Alternative fuels are vehicle fuels that aren't made from petroleum. There are many kinds of fuels that vehicles can run on that aren't made from petroleum.

The United States Department of Energy officially recognizes this list of alternative fuels:

- alcohols (ethanol and methanol);
- compressed natural gas (CNG) – natural gas under high pressure;
- electricity – stored in batteries;
- hydrogen – a very special type of gas;
- liquefied natural gas (LNG) – natural gas that is very, very cold;
- liquefied petroleum gas (LPG, also called propane) – hydrocarbon gases under low pressure;
- liquids made from coal – gasoline and diesel fuel that doesn't come from petroleum;
- biodiesel – a lot like diesel fuel, but made from plant oil or animal fat.

(Adapted from: <http://www.energyquest.ca.gov/transportation/index.html>, 18 March, 2011)

Hybrid Cars



Read the text *Hybrid-Electric Vehicles* and answer the following questions:

- What are hybrid vehicles?
- Name advantages of a hybrid vehicle, compared to the traditional internal combustion vehicle.

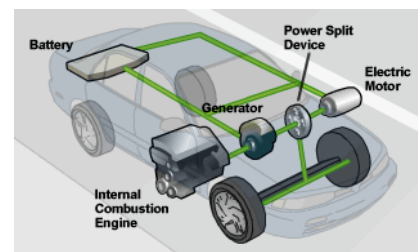
Hybrid-Electric Vehicles

Hybrid-electric vehicles are a combination of the classical internal combustion engine and the electric motor. Among the advantages of this combination are more economical fuel consumption and more power.

Some of the modern technologies used by hybrids include:

Regenerative Braking. The electric motor applies resistance to the drive train causing the wheels to slow down. In return, the energy from the wheels turns the motor, which functions as a generator, converting energy normally wasted during coasting and braking into electricity, which is stored in a battery until needed by the electric motor.

Electric Motor Drive/Assistance. The electric motor provides additional power to assist the engine in accelerating, passing, or hill climbing. This allows a smaller, more efficient engine



to be used. In some vehicles, the motor alone provides power for low-speed driving conditions where internal combustion engines are least efficient.

Automatic Start/Shutdown. Automatically shuts off the engine when the vehicle comes to a stop and restarts it when the accelerator is pressed. This prevents wasted energy from idling. (Adapted from: <http://www.fueleconomy.gov/feg/hybridtech.shtml>, 30 September, 2010)



Read the text *Hybrid-electric vehicles* again. Find the words that belong to the same word family and complete the table. Use a dictionary.

verb	noun	adjective
to combine	<i>combination</i>	combining
to electrify	electricity	
to consume		consuming
to resist		resisting



Read the text *Hybrid-Electric Vehicles* again and find the Slovenian expressions for the following:

- accelerate
- fuel consumption
- internal combustion engine
- regenerative braking



Read the text *British Town Demonstrates World's First Garbage Truck Powered by Garbage* and fill the gaps with the words given below.

charge
garbage

collect
recycling

electricity
speed

British Town Demonstrates World's First Garbage Truck Powered by Garbage

A town in Britain has recently demonstrated its new vehicle – an electric garbage truck that is fuelled by the ¹*garbage* it collects. The Kirklees Council presented the waste-powered Ford Transit garbage truck at Huddersfield town centre last week.



The vehicle will ² _____ garbage from 25 newly installed split bins and take it to the Energy from Waste power station and ³ _____ centre nearby. The power station burns the garbage to generate ⁴ _____, and the truck recharges at a charging post to be ready for the next day's route.

The garbage truck is a modified Smith Edison 3.5-ton Ford Transit with a 40 kWh lithium-ion battery pack. The vehicle has a top ⁵ _____ of 50 mph, a 100-mile range, and takes about six to eight hours to ⁶ _____. The only reported downside is that the quiet electric truck may present safety issues for unsuspecting pedestrians.

Besides powering the garbage truck, the Energy from Waste station also pumps about 10 megawatts of electricity into the grid per day. All the power is generated from burning local garbage. (Adapted from: <http://www.physorg.com/news152812939.html>, 12 August, 2010)



Read the text *Household Drinking Water Protection and Treatment* and fill in the gaps with the correct form of the word in brackets.

Household Drinking Water Protection and Treatment

When we go to the faucet for a drink of water, we expect a glass of clear, safe water. When bathing, doing laundry or using water for cooking, we also expect clean, fresh water. Although most groundwater is safe to drink and ¹suitable (suit) for household tasks, there is growing concern about ² _____ (contaminate) of public and private water supplies.



Due to poor techniques in applying and disposing of household, ³ _____ (agriculture) and industrial chemicals are showing up in water supplies. In mining and petroleum drilling areas, ⁴ _____ (danger) levels of metals have been detected in groundwater and surface water supplies. In a private well water testing program conducted by the Montana State University, 43 % of 1400 water samples taken from private wells exceeded the federal limit of coliform bacteria. Fortunately, the levels detected were below established guidance levels that indicate cause for health concern.

Even if you're on a public water supply, potential problems exist. While municipal water supplies must comply with federal ⁵ _____ (drink) water standards, there may still be health-related water problems. In areas with naturally soft, ⁶ _____ (acid) waters, lead may leach from piping and solders. Cadmium and zinc may enter drinking water as a result of corrosion of galvanized pipe.

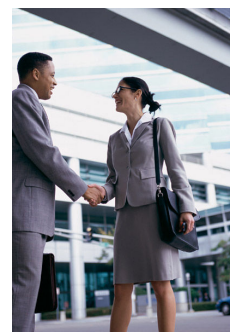
Small communities and individuals with private wells often face difficult ⁷ _____ (decide) about costly drinking water treatments. Economics often prohibit construction of a central ⁸ _____ (treat) system for small communities. ⁹ _____ (Construct) of new wells or piping water from neighboring supplies of better quality may not be feasible. For these small community water systems and for homes with private wells, in-home water treatment may be more cost ¹⁰ _____ (effect) in removing undesirable contaminants from the water.

(Adapted from: http://waterquality.montana.edu/docs/homeowners/household_water.shtml, 8 April, 2011)

3.4 MEETING AT THE AIRPORT



Mary is meeting Mr. Craig at the airport. Match Mary's sentences with Mr. Craig's answers. Then put the conversation in a logical order. Practice dialogues.



Mary

1. Welcome to Ireland.
2. Excuse me, are you Mr. Craig?
3. Hello. I'm Mary. Nice to meet you.
4. Let me help you with your luggage.
5. Is this your first visit to Ireland?
6. Did you have a good flight?

Mr Craig

- a. Yes, thank you.
- b. No, I was here last year.
- c. Thank you. It's nice to be here.
- d. Yes, that's right.
- e. Thank you.
- f. Nice to meet you, too.



Find and underline phrases in the dialogue above that have a similar meaning to following phrases:

- How was your journey?
- Pleased to meet you.
- Have you been here before?
- Can I give you a hand?



Look at these topics of conversation. Which ones are suitable when you meet someone for the first time? Write *yes*, *no* or *maybe*.

- the visitor's clothes
- your families
- the place you are in
- the visitor's journey
- politics
- the weather
- hobbies
- religion

(Wood, 2003, 5)



Read these extracts from the conversation between Mary (A) and Mr. Craig (B). Which topics in previous exercise do they discuss?

- 1 A So, how was your journey?
B It was fine, thanks. The plane wasn't full.
A Well, not many people come to Ireland at this time of year.
B No, I guess not. Is it always this cold in October?
A Well, not usually this cold. How was the weather in New York?
B Actually, it was quite warm. About 19 degrees.
- 2 B Where in Ireland are you from?
A From Cork, in the south. Have you been there?
B Yes, I have. It's a beautiful city.
A What about you? Do you live in New York?
B Yes, I do, but I was born in Pittsburgh.

- 3 B That's an amazing building. What is it?
A It's the new rugby and football stadium. Are you interested in rugby?
B I don't know much about it, but my brother loves it.
A Your brother? Do you have a big family?
B No, just one brother. What about you? Do you have any brothers or sisters?
A Yes, I have two sisters.



Underline the questions the speakers use to introduce the topic.



Work in pairs. Imagine you come from different countries. Role play a similar conversation. Take turns to be the host and the visitor. Try to keep conversation going using the questions you underlined in the dialogue.

Summary

Natural resources are being depleted and the ozone layer is thinning. People have finally become aware of sustainability; scientists are looking for other sources of energy.

In this unit we spoke about natural resources and their conservation, global warming and sustainability, and improved business English.

Revision



Think of Slovenian environment. What are we doing to protect our environment? Write a composition with the title *Ecology in Slovenia* in about 150 words (3 paragraphs). Include the following: set a problem, discuss the problem, and propose a solution or tell how it is being/can be solved.



Look at the list of alternative fuels on page 33, choose one, find sources on the topic and describe (in about 150 words) how the system works.

4 INFORMATION TECHNOLOGY

After this unit you will be able to:

- discuss information technology and the professional use of computers;
- talk about the impact of the information technology on the environment;
- describe automated waste treatment;
- write an effective e-mail.



4.1 COMPUTERS



How much time do you spend at your computer? What do you use computer for in your private life? Why do you need a computer at your work? Where are the computers used?



Read the text and answer the following questions:

- What is a computer?
- How does it work?
- Name two types of computers.
- What are computers used for?

A computer is a device or machine for processing information from data according to a program — a compiled list of instructions. The information to be processed may represent numbers, text, pictures, or sound, amongst many other types.

Computers are extremely versatile. In fact, they are universal information processing machines. A computer with a certain minimum threshold capability is in principle capable of performing the tasks of any other computer, from those of a personal digital assistant to a supercomputer. Therefore, the same computer designs have been adapted for tasks from processing company payrolls to controlling industrial robots.

(Adapted from: <http://en.wikipedia.org/wiki/Computers>, 3 June, 2010)



Read the text again and find the Slovenian expressions for: data, payroll, threshold and versatile.



Read the text *Computers and the Environment* and fill in the gaps with the correct form of the word in brackets.

Computers and the Environment

The acceleration of scientific achievement in the last few decades was enabled by computers. During this time significant changes have begun to occur in our ¹*natural* (nature) environment as a result of technological ² _____ (develop), social changes, and the massive production and ³ _____ (consume) of computing equipment. The lifetime of a

computer – production, use, and ⁴ _____ (dispose) – makes it closely tied to the environment. Its production involves trace metals and other substances that pose health hazards in the handling toxics in ⁵ _____ (produce) and end-of-life processes. Computer use can lead to ⁶ _____ (environment) benefits with the study complex environmental systems, greater ⁷ _____ (ecology) education, or enabling *paperless* offices. Then at the end of a useful lifetime, computers create disposal challenges posed by ⁸ _____ (hazard) materials present and difficulties in recycling. (Adapted from: <http://cpsr.org/issues/env/>, 10 April, 2011)

4.2 AUTOMATED WASTE TREATMENT



What is automated waste treatment? Write down your ideas and discuss them with other students.



Match the expressions with the correct pictures.

mechanical arm

recycling container

wheeled cart for garbage

wheeled recycling cart for bottles and cans

wheeled recycling cart for paper



Read the text *Automated Recycling and Trash Collection* and answer the following questions:

- What did the City of Warwick introduce in 2003?
- Why is it called automated?
- Name three goals of the new method.
- What are the advantages of the new system?
- Describe the three different containers.

Automated Recycling and Trash Collection

Beginning in the summer of 2003, the City of Warwick instituted a convenient, exciting method of trash and recycling collection – the automated system.



Automated collection is a technologically advanced system of refuse and recycling collection and disposal. The system is called *automated* because a special truck, equipped with a mechanical/robotic arm, automatically lifts and empties special trash and recycling containers without the driver ever leaving the cab of the truck. This is a system designed to improve the efficiency of the Sanitation & Recycling Division, make the task of putting out garbage easier and cleaner for the resident, improve the appearance of the City and greatly reduce the injury potential for City employees.

The new automated system is safer, more efficient and requires less labor to collect solid waste. In addition, because the mechanical arm performs all the lifting, there is no risk of injury to the driver. Each residence receiving curbside service is provided three containers: one 96-gallon wheeled cart (gray) for garbage, one 65-gallon wheeled recycling cart (blue) for bottles and cans, and one 65-gallon wheeled recycling cart (green) for paper and cardboard at no cost. The new system is the next step in improving trash and recycling service to our residents.

(Adapted from: <http://www.warwickri.gov/recycsanit/auto.htm>, 23 November, 2010)



Read the text *Automatic Sorting of Waste for Recycling* and fill in the gaps with the correct form of the word in brackets.

Automatic Sorting of Waste for Recycling

Sorting garbage for recycling saves resources, reduces ¹ _____ (environment) pollution and slows the build-up of landfills. Infrared light is the key to a sorting machine for drink cartons and plastic bottles developed by SINTEF.



In Norway most waste sorting takes place in the home, but several European countries have chosen other ² _____ (solve). The solution developed by SINTEF is based on infrared spectroscopy, using ordinary halogen lamps as light source. In the selected range of infrared wavelengths, objects have different ³ _____ (reflect) properties than for ordinary visible light. In this way the computer can distinguish between plastic-coated cardboard, ordinary cardboard and different kinds of plastics by small variations in the *colour* of the reflected infrared light. The human eye, however, can detect only the visible colour of the objects.

The reflection at the ⁴ _____ (vary) infrared wavelengths is recorded as the waste crosses a sensing line of the ⁵ _____ (convey) belt. The data is sent to a computer, which analyses the readings and constructs an analysis.

Based on this ⁶ _____ (analyse), the computer identifies the location of the different elements in the waste on the conveyor and directs jets of pressurized air to blow, e.g. the beverage cartons into a container, while the rest of the waste continues to another conveyor. (Adapted from: <http://www.sintef.no/Home/Information-and-Communication-Technology->

[ICT/Optical-measurement-systems-and-data-analysis-/Projects/Automatic-sorting-of-waste-for-recycling/](#), 9 October, 2010)



Read the text *Automatic Sorting of Waste for Recycling* again and find the Slovenian expressions for: cardboard, conveyor belt, landfill, pollution and recycling.



Read the text *Automatic Sorting of Waste for Recycling* and answer the following questions:

- What is the benefit of sorting waste?
- What sort of waste does SINTEF use the infra-red light for?
- Where do they sort waste in Norway?
- How does the sorting machine “recognise” various types of waste?

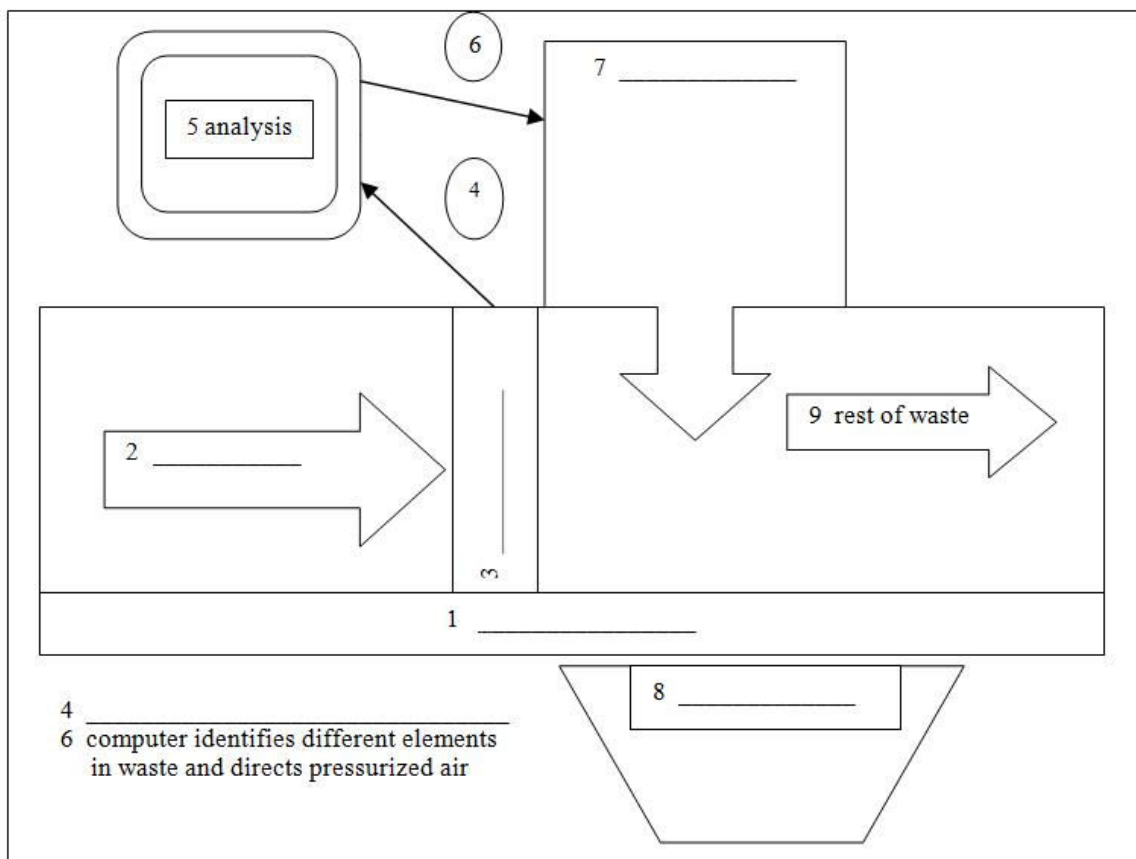


Read the last two paragraphs of the text *Automatic Sorting of Waste for Recycling* again and complete the scheme below with the following expressions:

beverage cartons
sensing line

conveyor belt
the data is sent to the computer

pressurized air
waste



Picture 4: Automatic Sorting of Waste for Recycling
Source: Author’s own

4.3 WRITING A BUSINESS E-MAIL



Why do people use e-mail in business? Make a list of reasons.



Here are some rules for writing effective e-mails:

1. Use a subject line that tells the other person what the e-mail is about. Don't just write *Information* or *Your e-mail*.
2. If you are writing to someone you don't know, start by saying who you are and why you are writing.
3. Use written greetings (Dear Mr. Smith) and endings (Yours sincerely), just as you would in a letter.
4. Use short, clear sentences.
5. Use paragraphs for different subjects. Leave a space between paragraphs.
6. In business e-mails always use a formal and polite tone. Don't be too informal or familiar.
7. Don't use emoticons (☺) or acronyms (BTW – by the way).
8. Don't write in CAPITAL LETTERS – this is like shouting.
9. Don't repeat yourself – try not to use the same word more than once in a paragraph.
10. Check your spelling and punctuation – are they correct? If you are worried about your spelling, use a spell check.

(Wood, 2003, 10)



Read the e-mail below from a student to a company about their work experience programme. Which rules in *How to write an effective e-mail* does he break?

From: PetroPescara@gmail.com
To: abright@reho.com
Sent: Friday, August 13, 2010 1:40 PM
Subject: Information

¹*Hello Amy!*

²*I'm Petro* from Pescara. ³*Can you tell me about* your student programme? I know your company takes students who want some work experience in their holidays, and ⁴*I want to apply for* the programme because I want to get some experience of working in a big multinational company and I also want to practise my English and make it better, because I think it is VERY BAD. Sorry about that!! I want to know more about the program, so ⁵*please give me some more information*, in particular the dates, the details of the daily work, how much you pay, where I can stay, etc. I study marketing so I would like to work in the marketing department if it is possible. BTW, I'm a 20-year-old student of business living in Italy. Sorry, I forgot to tell you that.

⁶*Send me your reply soon.* Thanks a lot. Bye.

Petro



Look at the phrases in italics (1-6) in the e-mail. Match them with the formal phrases (a-f) below.

- a. Could you send me more information ...
- b. I look forward to hearing from you.
- c. I am writing to ask about ...

- d. My name is Petro Ferrara
- e. Dear Ms Bright
- f. I am interested in applying for ...



Here are some phrases to use in e-mails. Write starting (S), ending (E), and saying why you are writing (W) or requesting (R) after each one and the ones in the exercise above.

1. My name is ...
2. I'm a student at ... (college)
3. Dear Amy (informal)
4. Thank you for your message.
5. With best wishes
6. Please e-mail me if you need more information.
7. Yours sincerely
8. Thank you for your e-mail of 20th August.
9. Please send me details of ...



Work in pairs. Rewrite the e-mail on the previous page using the rules in *How to write an effective e-mail* and some of the phrases in the exercise above.



What are these symbols called in English?

mary_glasgow@track-back.com				
↑	↑	↑	↑	
a	b	c	d	

- e / _____
- f \ _____
- g # _____
- h * _____
- i (_____
- j) _____



Read the email and website addresses as in the example.

- a ann.thompson@gmail.com ann dot thompson at gmail dot com
- b www.micro-systems.com
- c robin.stevens@cev-consulting.uk
- d www.rent-a-car.de
- e elizabeth_peters@zebra.ca
- f your e-mail address
- g your company website address

Summary

A computer is a device or machine for processing information from data according to a program. Computers are extremely versatile. They can lead to great environmental benefits

with the study of complex environmental systems. On the other hand, at the end of their useful lifetime, computers create disposal challenge.

Automated collection is a technologically advanced system of refuse and recycling collection and disposal. A special truck automatically lifts and empties special trash and recycling containers without the driver leaving the cab of the truck. The system is to improve the efficiency of trash collection, improve the appearance of the city and greatly reduce the injury potential for the employees.

Automatic sorting of garbage for recycling saves resources, reduces environmental pollution and slows the growth of landfills. Infrared light is the key to such a sorting machine. In this unit you also learnt how to write an effective business e-mail.

Revision



Where do you work? Do you use a computer at your work? How *computerized* are you? Write a composition of about 70 words about the way the computer is used in your profession. Describe what you or your company uses computers for.



You are employed at the Department for Domestic Heating. You have just received an e-mail from a citizen, asking about the possibility of installing a heating oil system. Write a reply. Invent any necessary details.

5 SAFETY

After this unit you will be able to:

- find specific information in authentic texts with the topic of safety;
- discuss occupational health and safety;
- identify and describe various dangerous goods;
- make an effective presentation of a company, product or service.



How would you define *safety*? Which areas of our lives does it cover?



Look at the definition of the word *safety* from Encyclopedia Britannica.

safety – activities that seek either to minimize or to eliminate hazardous conditions that can cause bodily injury. Safety precautions fall under two principal headings, occupational safety and public safety. Occupational safety is concerned with risks encountered in areas where people work: offices, manufacturing plants, farms, construction sites, and commercial and retail facilities. Public safety involves hazards met in the home, in travel and recreation, and other situations not falling within the scope of occupational safety. (Adapted from: <http://www.britannica.com/EBchecked/topic/516063/safety>, 25 October, 2010)

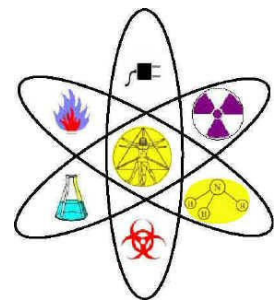


Read the text *Occupational Health and Safety* and answer the following questions:

- »Prevention is better than cure,« says an old English proverb. Is that true for the first paragraph of the text?
- In what ways can our workplace be dangerous?
- Who is responsible for health and safety at work?

5.1 OCCUPATIONAL HEALTH AND SAFETY

Workers in every occupation can be faced with a multitude of hazards in the workplace. Occupational health and safety addresses the broad range of workplace hazards from accident prevention to the more insidious hazards including toxic fumes, dust, noise, heat, stress, etc. Preventing work-related diseases and accidents must be the goal of occupational health and safety programmes, rather than attempting to solve problems after they have already developed.



Hazards in the workplace can be found in a variety of forms, including chemical, physical, biological, psychological, non-application of ergonomic principles, etc. Because of the multitude of hazards in most workplaces and the overall lack of attention given to health and safety by many employers, work-related accidents and diseases continue to be serious problems in all parts of the world. Therefore, trade unions must insist that employers control hazards at the source and not force workers to adapt to unsafe conditions.

Management commitment to health and safety and strong worker participation are two essential elements of any successful workplace health and safety programme. The most effective accident and disease prevention begins when work processes are still in the design

stage. (Adapted from: <http://www.itcilo.it/english/acrav/telearn/osh/intro/inmain.htm>, 10 October, 2010)







Read the text *Occupational Health and Safety* again. Find the words that belong to the same word family and complete the table. Use a dictionary.

<i>verb</i>	<i>noun</i>	<i>adjective</i>
to occupy	occupation	<i>occupational</i>
to succeed	success	
to attend		attentive
	face	facial
to prevent		preventive
to save		safe

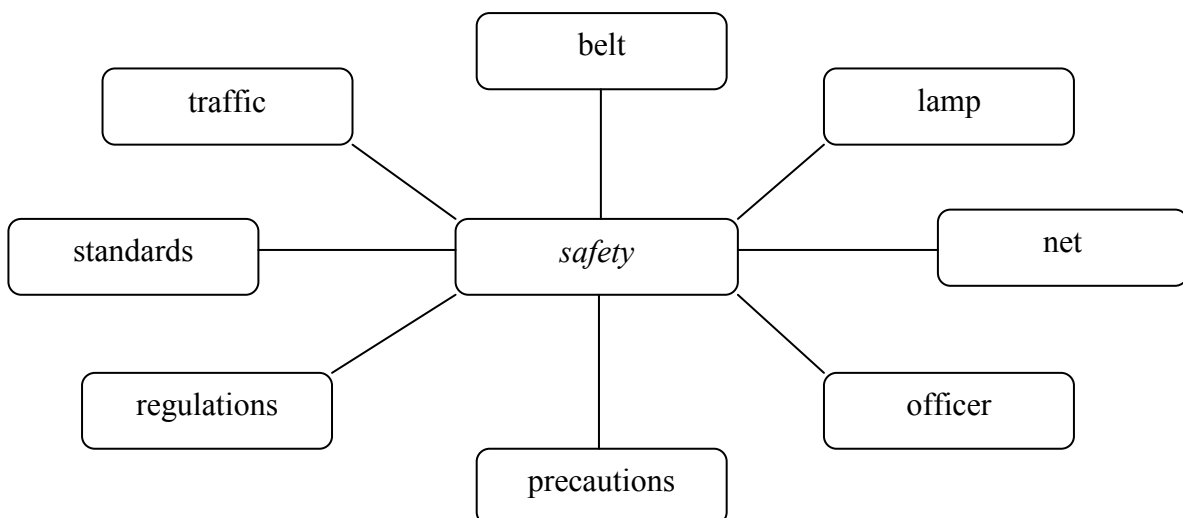


The pictures below show different workplaces where a variety of hazards can be found. Look at the pictures and imagine what sort of problems might exist in each workplace. Discuss the hazards that may be associated with these jobs.

			
a mechanic	an agricultural worker	an office worker	a construction worker



Look at the collocations with the word *safety* and discuss their meanings.



5.2 DANGEROUS GOODS



Read the text *Dangerous Goods* and answer the following questions:

- What are dangerous goods?
- What safety measures do you have to take if you transport dangerous goods?
- What do people have to do if they work with dangerous goods?
- How does the European Union regulate transport of dangerous goods?

Dangerous Goods

Dangerous goods (hazardous materials) are any solid, liquid, or gas that can harm people, other living organisms, property, or the environment. Dangerous goods may be radioactive, flammable, explosive, toxic, corrosive, biohazardous, an oxidizer, an allergen, or may have other characteristics that render it hazardous in specific circumstances.



The risks associated with hazardous materials may require the application of safety precautions during their transport, use, storage and disposal. Most countries regulate hazardous materials by law, and they are subject to several international treaties as well.

Persons who handle dangerous goods will often wear protective equipment, and metropolitan fire departments often have a response team specifically trained to deal with accidents and spills. Persons who handle or potentially come into contact with dangerous goods as part of their work are also often subject to monitoring or health surveillance to ensure that their exposure does not exceed occupational exposure limits.

The European Union has passed numerous directives and regulations to avoid the dissemination and restrict the usage of hazardous substances, the most famous being the Restriction of Hazardous Substances Directive and the REACH regulation. There are also long standing European treaties such as ADR and RID that regulate the transportation of hazardous materials by road, rail, river and inland waterways, following the guide of the UN Model Regulation.

Dangerous goods are divided into classes on the basis of the specific chemical characteristics producing the risk. (Adapted from: http://en.wikipedia.org/wiki/Dangerous_goods, 24 August, 2010)



Read the text *Dangerous Goods* again and find the Slovenian expressions for the following:

- dangerous goods
- disposal
- flammable
- precaution
- spill
- storage
- surveillance
- treaty

Labelling of Dangerous Goods



Match the expressions with the correct pictures.

C/Corrosive
O/Oxidizing

E/Explosive
T/Toxic

F/Flammable

N/Environmental Hazard
Xn/Harmful; Xi/Irritant



Read the text *Hazardous Waste* and fill in the gaps with the correct form of the word in brackets.

Hazardous Waste

Hazardous wastes are discarded materials with properties that make them potentially ¹ _____ (harm) to human health or the environment.

Hazardous wastes can include things such as chemicals, heavy metals, or substances generated as byproducts during ² _____ (commerce) manufacturing processes, as well as discarded household products like paint thinners, cleaning fluids, and old batteries. Hazardous wastes can be in the form of liquids, solids, contained gases, or sludges.



Much of this ³ _____ (hazard) material is stored in landfills or other containment areas. If these hazardous waste sites are not properly designed or managed, their contents can be released into the surrounding environment, posing a threat to public health. To address this issue, the NIEHS has created a Hazardous Waste Worker Training Program (HWWTP) to support the safety and health of workers engaged in activities related to hazardous waste and chemical emergency ⁴ _____ (respond).

(Adapted from: <http://www.niehs.nih.gov/health/topics/exposure/haz-waste/>, 18 March, 2011)

5.3 PRESENTATIONS



Study the stages of a presentation 1–7. Then fill in the gaps with words from the box below.

1. Start with something to get attention: a surprising fact; a reference to “here and now”; a question; a humorous story; audience participation: a visual aid. _____
2. a) Say a few words about yourself; b) Tell the audience the structure of your talk; c) Tell the audience how they will benefit from your presentation. _____
3. Present a small number of main points – a maximum of four. _____
4. Connect each point to the needs/interests of your audience. For example, show the audience how they will benefit or ask them a question. _____
5. Give examples to make your points clear. _____
6. Summarize the main points again. Mention the key benefits – how audience members can apply the information in your talk to their specific situation. _____
7. Finish with impact: a link back to your opening Bang!; a dramatic statement which sums up your message; an unusual visual aid; a strong Thank you for your attention; a call to action (something you want the audience to do). _____

Examples	Recap	Bang!	Bang!	Bridge	Message	Opening
-----------------	--------------	--------------	--------------	---------------	----------------	----------------



The first letters of the answers you wrote in Section A spell BOMBER B. Remember this phrase – it will help you to plan your presentations. Match each extract below with a stage of BOMBER B.

1. By the end of my talk you will be able to decide if you need to ..., and if so what are the different options. Opening (c)
2. OK, let's stop there. I'd like to finish by thanking you all for your attention. I'm now going to distribute this brochure ... As you can see from the title, the message I want to leave you with today is: “Let's grow – together.” _____
3. Well, good morning everyone. I hope you all found somewhere to park your car this morning. They say the roadworks will be finished shortly, but they've been saying that for the past six months! OK, today I'm going to talk to you about a new product to help people to give up smoking. Did you know that every day 1,000 people die from smoking-related diseases? That's the same as two jumbo jets crashing every day. _____
4. I'd like to turn to the question of ... How many of your clients put this as their number one priority? _____
5. Right, I think that covers everything. So, before I finish, let me just summarize my main points again. I've talked about ..., I also described ..., and I explained ... In short, I've tried to show you how ... _____
6. My name is ... and I'm a Senior Partner here at Morris Brothers. During my presentation I'll be talking about three main areas. First, I'll tell you a little about ..., second ..., and third why we believe we can offer ... If anyone has any questions, please feel free to interrupt. _____

(Emmerson, 1999, 54)



Prepare a mini presentation including the BOMBER B structure. Choose one of the topics:

- My country
- My hobby
- My company

Here are some expressions to help you:

1. Introduction

- Can everyone see? Well, good morning ladies and gentlemen. Thank you for coming. Before we start I'd like to introduce myself. My name is (name) and I am the (position) of (company). I'm here today to talk about ...
- I'm going to look at three main areas. First, I'll talk about ... After that I will ... And finally ...
- My presentation will take around 10 minutes. If you have any questions, I'll be happy to answer them at the end of my talk.

2. Main presentation

- First of all, I'd like to look at Any questions so far?
- Secondly, ... I'd like you to look at ... You will see that ... As you can see from the graph, ... The figures show that ...
- This brings me to my last point, which is ... As you know, ... In general, ... On the other hand, ... Finally, ...

3. Conclusion

- In conclusion, let me briefly go through the main points again. First I talked about ..., then I described ..., and finally I ...
- Right, I think that's everything. Let me finish by thanking you very much for your attention. And now, if you have any questions, I'll be happy to try to answer them.

(Emmerson, 1999, 56)

Summary

Occupational health and safety is an important issue of each management. Each employee is exposed to certain dangers and harmful influence at his/her workplace.

It is particularly important to realize the importance of safety measures when dealing with hazardous materials. In this unit you have acquired vocabulary of safety at work and learnt to identify and discuss dangerous goods.

You also learnt how to make an effective presentation of a company, product or service.

Revision



Consider and discuss the hazards at your own workplace. Think about the following: Describe the job you do. What hazards exist in you workplace? Are there other conditions at work that you suspect may be hazardous but you are not sure about?



Think of an environmental issue/problem. Look for different sources (texts, pictures, videos, ...) and prepare a 10-minute presentation according to the BOMBER B scheme.

6 WATER

After this unit you will be able to:

- read the periodic table of elements in English;
- explain the changes in the state of water;
- describe the water supply system;
- discuss the importance of clean drinking water;
- use English for specific purposes on the topic of wastewater treatment.



Why is water important? Where do we get drinking water from? What are the problems with drinking water?

6.1 THE WATER CYCLE



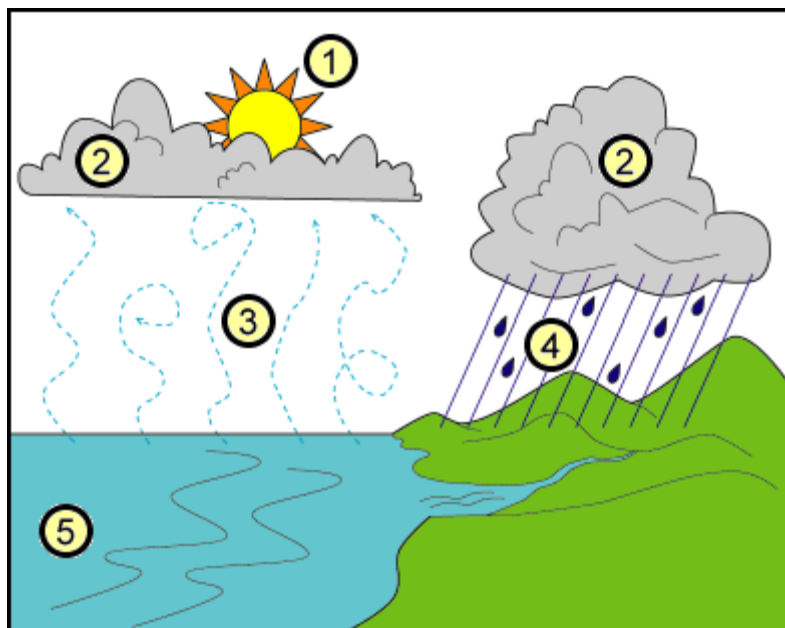
Look at the picture and fill the gaps in the text with the given words and expressions.

cloud (2x)
cycle

ground
rivers and lakes

sun
water (2x)

The ¹ _____ evaporates ² *water* from lakes and oceans. As the air rises, it cools. The water vapor condenses into tiny droplets of ³ _____. The droplets crowd together and form a ⁴ _____. Wind blows the ⁵ _____ towards the land. The tiny droplets join together and fall as precipitation to the ground. The water soaks into the ground and collects in ⁶ _____. The ⁷ _____ that never ends has started again!



Picture 5: Water Cycle

Source: http://education.jlab.org/reading/water_cycle_r.html (18 March, 2011)

6.2 WATER SUPPLY

The State of Matter



Look at the periodic table of elements and find the symbols of the following:

oxygen _____; hydrogen _____; nitrogen _____; sodium _____; calcium _____

Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Period																			
1	H																	He	
2	Li	Be											B	C	N	O	F	Ne	
3	Na	Mg											Al	Si	P	S	Cl	Ar	
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
6	Cs	Ba	*	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	**	Lr	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Uuq	Uup	Uuh	Uus	Uuo
*Lanthanoids			*	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb		
**Actinoids			**	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No		

Picture 6: Periodic Table of Elements

Source: <http://www.webelements.com/> (25 August, 2010)

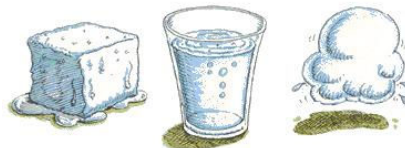


Read the text *The Changes in State of Water* and find the English expressions for the following:

- agregatno stanje
- plin
- tekočina
- trda snov

The Changes in State of Water

There are 3 states of matter in water. They are solid, liquid and gas. Here you can find out how one changes to another.



Gas to Liquid. When a gas changes to a liquid, it goes through the process of *condensation*. This is when the gas cools and loses energy. Then the particles are forced to change state, from a gas to a liquid.

Liquid to Solid. When a liquid changes to a solid, it goes through the process of *freezing*. This is when a liquid cools below the freezing point and loses energy. Then the particles are forced to change state, from a liquid to a solid.

Solid to Gas. When a solid changes directly to a gas, it goes through the process of *sublimation*. The particles are forced to change state.

Liquid to Gas. The process in which a liquid changes into a gas is called *evaporation*. When a liquid gains enough energy, it can overcome all of the attracting forces. Then it changes state, from a liquid to a gas.

Solid to Liquid. The process in which a solid changes into a liquid is called *melting*. When a solid gains enough energy, it can overcome some of the attracting forces. Then it changes state, from a solid to a liquid.

Gas to Solid. When a gas changes directly into a solid, without going through the liquid state, it is called *frost formation*.

(Adapted from: <http://www.elytradesign.com/ali/html/changes.htm>, 25 August, 2010)

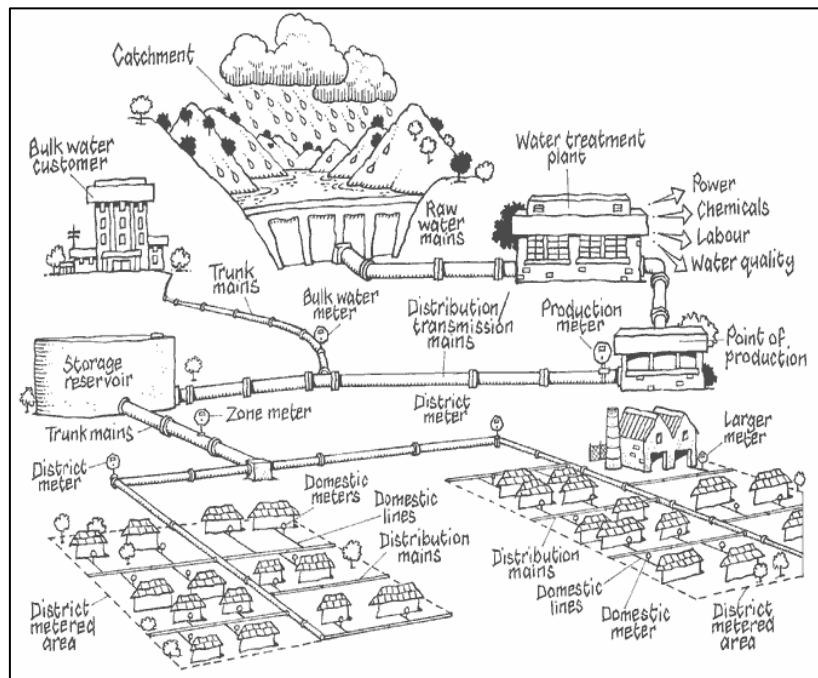


Read the text *The Changes in State of Water* again and find the Slovenian expressions for the following:

- attracting forces
- condensation
- evaporation
- freezing
- frost formation
- melting
- sublimation



Look at the picture and try to explain the system of water supply.



Picture 7: Water Supply System

Source: <http://www.pacificwater.org/pages.cfm/water-services/water-demand-management/what-water-demand-management/the-water-supply-system.html>

(28 November, 2010)



Read the text *Water Supply Network* and make a list of collocations with *water*.



Water Supply Network

A water supply system or water supply network is a system of engineered hydrologic and hydraulic components which provide water supply. Raw water is collected from a surface water source or from a groundwater source within the watershed that provides the water resource.



The raw water is transferred to the water purification facilities using uncovered aqueducts, covered tunnels or underground water pipes. Water treatment must occur before the product reaches the consumer.

Traditional surface water treatment plants generally consist of three steps: clarification, filtration and disinfection. Clarification refers to the separation of particles (dirt, organic matter, etc.) from the water stream. Chemical addition (i.e. alum, ferric chloride) destabilizes the particle charges and prepares them for clarification either by settling or floating out of the water stream. Sand, anthracite or activated carbon filters refine the water stream, removing smaller particulate matter. While other methods of disinfection exist, the preferred method is via chlorine addition. Chlorine effectively kills bacteria and most viruses and maintains a residual to protect the water supply through the supply network.

The product, delivered to the point of consumption, is called fresh water if it receives little or no treatment or drinking water if the treatment achieves the water quality standards required for human consumption.

Today, water supply systems are typically constructed of plastic, ferrous, or concrete circular pipe. However, other *pipe* shapes and material may be used, such as square or rectangular concrete boxes, arched brick pipe, or wood. Near the end point, the network of pipes through which the water is delivered is often referred to as the water mains.

(Adapted from: http://en.wikipedia.org/wiki/Water_supply_network, 18 March, 2011)



Read the text *Safe Drinking Water Act* and answer the following questions:

- What was the original purpose of the Safe Drinking Water Act?
- Is the SDWA still the same today?
- Which organisation sets standards for safe drinking water?
- Who is in charge of the compliance with the standards?
- Write down three water contaminants.
- Can pipelines present a threat to drinking water?

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells.

SDWA authorizes the United States Environmental Protection Agency (US EPA) to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. US EPA, states, and water systems then work together to make sure that these standards are met.

Millions of Americans receive high quality drinking water every day from their public water systems. Nonetheless, drinking water safety cannot be taken for granted. There are a number of threats to drinking water: improperly disposed of chemicals; animal wastes; pesticides; human wastes; wastes injected deep underground; and naturally-occurring substances can all contaminate drinking water. Likewise, drinking water that is not properly treated or disinfected, or which travels through an improperly maintained distribution system, may also pose a health risk.

Originally, SDWA focused primarily on treatment as the means of providing safe drinking water at the tap. The 1996 amendments greatly enhanced the existing law by recognizing source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water. This approach ensures the quality of drinking water by protecting it from source to tap.

SDWA applies to every public water system in the United States. There are currently more than 160,000 public water systems providing water to almost all Americans at some time in their lives. (Adapted from: <http://www.epa.gov/safewater/sdwa/basicinformation.html>, 12 July, 2010)



Read the text *Water Supply, Sanitation and Hygiene Development* and answer the following questions:

- How many people in the world do not have access to clean water?
- Which countries are most affected?
- List three problems that cause this situation.
- How can the problems be solved?

Water Supply, Sanitation and Hygiene Development

Around 1.1 billion people globally do not have access to improved water supply sources whereas 2.4 billion people do not have access to any type of improved sanitation facility.

About 2 million people die every year due to diarrhoeal diseases; most of them are children less than 5 years of age. The most affected are the populations in developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants.



Among the main problems which are responsible for this situation are: lack of priority given to the sector, lack of financial resources, lack of sustainability of water supply and sanitation services, poor hygiene behaviours, and inadequate sanitation in public places including hospitals, health centres and schools.

Providing access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing sound hygiene behaviours are of capital importance to reduce the burden of disease caused by these risk factors.

The work of WHO in this field covers the following topics:

- Operation and maintenance
- Environmental sanitation and hygiene development
- Healthy settings
- Environmental health in emergencies and disasters
- Water and sanitation on ships and aircrafts
- Household water treatment and safe storage

(Adapted from: http://www.who.int/water_sanitation_health/hygiene/en/, 3 June, 2010)



Read the text *Water Supply, Sanitation and Hygiene Development* again and find the Slovenian expressions for the following:

- diarrhoeal disease
- excreta
- household water treatment
- hygiene behaviour
- sanitary disposal
- sanitation facility
- sustainability



Read the text *How Water is Made Safe for Drinking* and fill in the gaps with the correct form of the word in brackets.

How Water is Made Safe for Drinking

There are two critical elements in providing safe drinking water for human ¹consumption (consume), filtration and disinfection.

As the first step in the ²_____ (filter) process, the raw (untreated) water enters the plant through a series of screens designed to remove large debris such as twigs and leaves. Then, at most ³_____ (treat) plants, the water slowly moves through a presedimentation basin where much of the sand and silt settle to the bottom.

During the next phase of the process, the water is speeded up and a liquid chemical, known as a coagulant, is added through a flash-mix process. The coagulant contains ⁴_____ (positive) charged atoms called ions.

The water then flows into a large basin where it is ⁵_____ (slow) stirred by large paddles. Suspended particles, which are ⁶_____ (negative) charged, are attracted to the positively charged coagulant. As the particles join together, they become heavier and start to settle. The process, called flocculation, takes about 25 minutes.

After flocculation, the water enters a final ⁷_____ (sediment) basin where the floc that was formed earlier is allowed to settle to the bottom. It takes about four hours to complete this process.

Water at the very top of the basin then moves to a large gravity filter. The filtration media can be a ⁸_____ (combine) of hard coal (anthracite), gravel and sand or, sometimes, just coal or just sand.

After the water is filtered, chlorine is added to kill any disease causing bacteria. Fluoride also is added to help prevent tooth decay. After water has completed the treatment process, it is referred to as finished or potable water. Most people simply call it ⁹ _____ (drink) water. The total ¹⁰ _____ (treat) process takes five to eight hours. (Adapted from: <http://phoenix.gov/WATER/drinkhow.html>, 12 July, 2010)



Fill the gaps with the correct words.

aqueduct
supply

gallons
water

pumped
wells

reservoir

Brief History of the New York City's Water Supply System

Early Manhattan settlers obtained water for domestic purposes from shallow privately-owned ¹ _____. In 1677 the first public well was dug. In 1776, when the population reached approximately 22,000, a reservoir was constructed on the east side. Water pumped from wells sunk near the Collect Pond, east of the ² _____, and from the pond itself, was distributed through hollow logs laid in the principal streets. As the population of the City increased, the well water became polluted and ³ _____ was insufficient.

After exploring alternatives for increasing supply, the City decided to impound water from the Croton River, and to build an ⁴ _____ to carry water from the Old Croton Reservoir to the City.

Water for the present Water System is impounded in three upstate reservoir systems which include 19 reservoirs and three controlled lakes with a total storage capacity of approximately 580 billion ⁵ _____. The three water collection systems were designed and built with various interconnections to increase flexibility by permitting exchange of water from one to another. This feature mitigates localized droughts and takes advantage of excess ⁶ _____ in any of the three watersheds.

In comparison to other public water systems, the Water System is both economical and flexible. Approximately 95 % of the total water supply is delivered to the consumer by gravity. Only about 5 % of the water is regularly ⁷ _____ to maintain the desired pressure. As a result, operating costs are relatively insensitive to fluctuations in the cost of power. When drought conditions exist, additional pumping is required. (Adapted from: http://www.nyc.gov/html/dep/html/drinking_water/history.shtml, 25 March, 2011)

6.3 WASTEWATER TREATMENT



What is wastewater treatment? Why is it necessary? When does it occur? Discuss the questions with other students.



Read the text *Moccasin Bend Wastewater Problem Could Take Hours or Days* and answer the following questions:

- What happened at the Moccasin Bend Wastewater Treatment Plant?
- How much untreated water flew into the river?

- When can the problem be solved?
- What caused the explosion?
- What was the result of the explosion?
- Is there a danger of contaminating the city's drinking water?

Moccasin Bend Wastewater Problem Could Take Hours or Days

Crews worked all night to try and fix an electrical problem that shut down pumps at the Moccasin Bend Wastewater Treatment Plant and sent close to 100 million gallons of untreated wastewater into the Tennessee River on Tuesday, city officials said.



Jerry Stewart, director of the city's Waste Resources Division, said EPB crews could have the problem solved as early as this morning, but he added that it could be several days before it's fixed.

Mr. Stewart said workers on Tuesday heard a loud explosion after a fuse on one of the plant's 15,000-volt power poles shorted out. The power outage stopped the plant's eight sewage pumps, causing massive overflows in three downtown locations, he said.

Kim Dalton, spokeswoman for Tennessee-American Water Co. in Chattanooga, said water officials have been told the sewage overflows are downstream of the city's drinking water. »No one understands what happened to the plant's power system,« Dr. Urban said. »But it has resulted in them not being able to move the waste being produced into the plant.« (Adapted from: <http://www.timesfreepress.com/news/2010/jan/27/moccasin-bend-wastewater-problem-could-take-hours/>, 18 March, 2011)



Read the text *Moccasin Bend Wastewater Problem Could Take Hours or Days* again and find the Slovenian expressions for:

- fuse
- overflow
- pump
- sewage
- short out
- untreated wastewater
- wastewater treatment plant



Read the text *Wastewater Treatment* and answer the following questions:

- What is wastewater treatment?
- What does household waste consist of?
- How many phases are there in wastewater treatment?
- In short, describe each phase.

Wastewater Treatment

Waste water treatment is the process of removing household and institutional wastes from the water supply. In most of the developed world, the process has been refined and is quite effective at conserving this life-sustaining element known as H₂O.



Household wastes, also called sewage, consist of debris that comes from toilets, sinks, kitchen garbage disposals, baths, and showers. Industrial wastes can be some of the same, though will usually also include contaminants like manufacturing by-products that are flushed through the factory's or other commercial facility's sewage system.

The treatment process involves at least four main phases. Those are preliminary, primary, secondary, and tertiary treatments.

During the *preliminary phase*, the heavier pieces of trash are filtered out of the flow from the main sewer once it gets to the treatment plant. Usually a bar screen carries the object out and up onto a conveyor belt, which carries the stuff and loads the stuff into a dumpster. The dumpster gets transported to and its contents emptied into a landfill.

The flow, now free of the heaviest objects, continues on to the *primary phase*. Here, the fluid moves into a grit chamber where the motion is slowed to allow for sedimentation of the remaining solids. As the sludge sinks, wooden slats called flights drag along the bottom of the tank, shoving the gunk toward a pump which removes it through a pipe system. Some of it goes into the trucks headed for the landfills. While the heavier materials sink, the non-solid contaminants like grease and oil rise to the top where they are skimmed and siphoned off to be incinerated. Some of the solid waste is pumped to an incinerator, too. The resulting ash is then used to make concrete, bricks, and other materials.

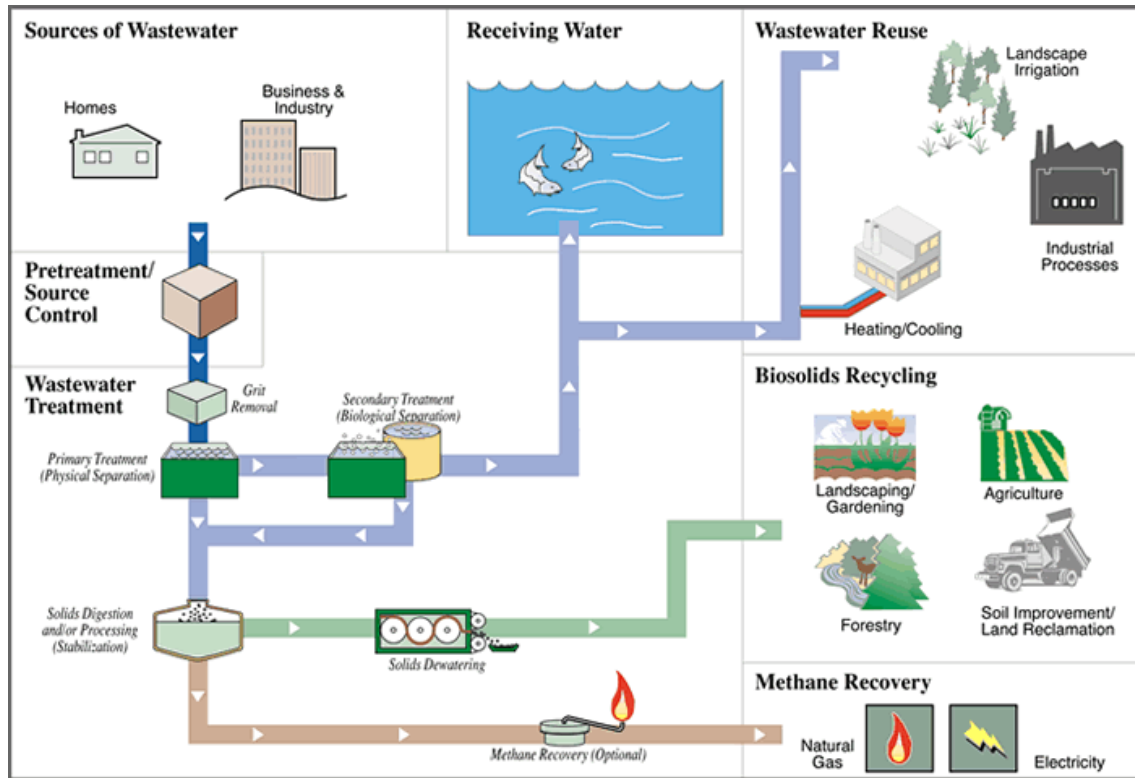
The materials that remain after the primary phase move on to the *secondary phase*. Here is where biological processes take over. Air is pumped into the full holding tanks to create a bacteria-rich environment. The end result of this process, whichever way it is done, is the bacteria feast on the remaining contaminants, and then float to the bottom where they become sludge that gets dragged by flights and pumped out to the incinerator.

The *tertiary*, or final stage, phase is any number of further cleansing processes. Sometimes chlorine is introduced to the flow to kill any remaining germs. Non-chemical processes can be used to further cleanse and clarify, too, making it safe to re-introduce it into the natural ecosystems like rivers, streams, and the ocean. For the water not quite contaminant-free enough, there are uses. Some is suitable for hydrating plants and golf courses for example.

Wastewater treatment facilities throughout the world are crucial to preserving the earth's sacred water supply. (Adapted from: <http://coolingtower-design.com/2010/12/18/wastewater-treatment-2/>, 18 March, 2011)



Look at the picture below and describe the wastewater treatment of biosolids.



Picture 8: Wastewater Treatment

Source: <http://www.virginiabiosolids.com/what/diagram.htm> (18 March, 2011)



Read the text *New Wastewater Treatment Plant Gives Visitors a Warm Welcome to the USA* and fill in the gaps with the correct form of the word in brackets.

New Wastewater Treatment Plant Gives Visitors a Warm Welcome to the USA

One of the busiest border crossings in the U.S. will soon welcome visitors with a stroll through a new wastewater ¹ _____ (treat) plant. That sounds a bit unfriendly but there's a twist. The "treatment plant" will be disguised as a ² _____ (beautiful) landscaped, man-made wetland environment that purifies wastewater through natural processes. Visitors using the Otay Mesa Land Port of Entry in California will amble to the U.S. through the wetlands on a curved, meandering pedestrian walkway. It's still ³ _____ (sewer), but it sure sounds a lot more pleasant than a TSA pat-down!



The new treatment plant/wetlands is called Living Machine, produced by the company Worrell Water Technologies. The concept is based on the ⁴ _____ (decompose) that takes place in tidal wetlands, in which two kinds of bacteria digest organic matter. These are anaerobic bacteria, which thrive in the absence of oxygen, and aerobic bacteria. The man-made Living Machine wetland is designed to maximize the ⁵ _____ (efficient) of these processes within the smallest possible space. Though the resulting water is not suitable for ⁶ _____ (drink) or cooking, it has a wide variety of other uses including

recharging aquifers, ⁷ _____ (irrigate), toilet flushing, cleaning, filling fountains and ornamental ponds, and various ⁸ _____ (industry) uses. The Living Machine at Otay Mesa will be capable of treating up to 1,500 gallons of high-strength “black water” from toilets and “gray water” from sinks.

Where sufficient land is available, constructed wetlands are becoming a mainstream means of treating and ⁹ _____ (recycle) wastewater, as evidenced by the fact that at least one very fancy private golf club has begun to irrigate its grounds with reclaimed wastewater. Constructed wetlands also play a key role in the U.S. EPA’s green remediation strategies, which are designed to reduce the carbon footprint involved in cleaning up Superfund and brownfield sites. (Adapted from: <http://cleantechnica.com/2010/12/10/new-wastewater-treatment-plant-gives-visitors-a-warm-welcome-to-the-u-s-a/>, 18 March, 2011)

Summary

Water supply is the provision of water, usually by a system of pumps and pipes. Continuous drinking water supply is taken for granted in most developed countries, but can be a serious problem in many developing countries.

Water treatment describes the processes which are used to make water more acceptable for a desired end-use. These can include use as drinking water, industrial processes, medical and many other uses.

In this unit we discussed the chemical elements and states of matter. We described the water supply system and the process of wastewater treatment.

Revision



In a newspaper, a magazine or on the internet, find an article about drinking water, water supply or wastewater treatment. Write a summary of about 150 words and present it to other students.

7 ENERGY

After this unit you will be able to:

- define energy and discuss different forms of energy;
- define and describe the renewable and nonrenewable sources of energy;
- discuss electrical power;
- describe the electrical power grid distribution;
- place an order;
- make a business telephone call.



What is energy? Where does it come from? Write down your ideas and discuss them with other students.



Read the text *Heating Options for Your Home* and answer the following questions:

- What is the text about?
- What kind of text is it: newspaper article, scientific treaty, advertisement or user's manual?
- List the factors you should consider when deciding on the installation of heating in your home.
- List the energy sources for heating discussed in the text.

Heating Options for Your Home

Did you freeze last winter? Were you in shock after reading the energy bill? Then it may be time to change the way you heat your home.

First, go back to basics: are you using the right fuel for your needs? Consider what's available (for example, can you get natural gas in your neighbourhood?), the fuel's cost (can you perhaps get cheap or even free firewood?) and its environmental impact (for example, does your electricity supplier offer a green-power scheme?).



Once you've decided on a fuel, you need to find the right type of heater. Do you want to heat a person, a room or your whole house?

If you only want to heat a small area or use the heater only occasionally, you probably want a heater that's cheap to buy, even if it's dearer to run than more expensive types. If you want to heat a large area for long periods, you need an efficient heater with low running costs. So it may make sense to pay more initially for the heater and its installation, because it'll pay off in the long run.

And you need to calculate the right size of heater for your needs. Take into account factors such as whether you have insulation and the size of your windows. (Adapted from: <http://www.choice.com.au/reviews-and-tests/household/heating-and-cooling/home-heating/heating-options-for-your-home-buying-guide.aspx>, 18 March, 2011)



Read the text *Heating Options for Your Home* again and find the Slovenian translations for:

- electricity supplier
- energy bill
- environmental impact
- insulation

7.1 WHAT IS ENERGY?



What is energy? Which forms of energy do you know? What do we get energy from?



Read the text *What is Energy?* and answer the following questions:

- What do we use energy for? Write three examples.
- How do the scientists define energy?

What is Energy?

Energy makes change possible. We use it to do things for us. It moves cars along the road and boats over the water. It bakes a cake in the oven and keeps ice frozen in the freezer. It plays our favorite songs on the radio and lights our homes. Energy is needed for our bodies to grow and it allows our minds to think.

Scientists define energy as the ability to do work. Modern civilization is possible because we have learned how to change energy from one form to another and use it to do work for us and to live more comfortably.

(Adapted from: http://www.eia.doe.gov/kids/energy.cfm?page=about_forms_of_energy-forms, 25 August, 2010)

Forms of Energy

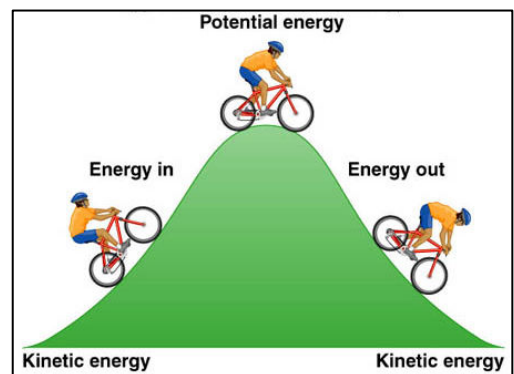


Read the text and do the exercises below.

Energy is found in different forms including light, heat, chemical, and motion. There are many forms of energy, but they can all be put into two categories: potential and kinetic.

Potential energy is stored energy and the energy of position — gravitational energy. There are several forms of potential energy.

- *Chemical Energy* is energy stored in the bonds of atoms and molecules. Biomass, petroleum, natural gas, and coal are examples of stored chemical energy. Chemical energy is converted to thermal energy when we burn wood in a fireplace or burn gasoline in a car's engine.



- *Mechanical Energy* is energy stored in objects by tension. Compressed springs and stretched rubber bands are examples of stored mechanical energy.
- *Nuclear Energy* is energy stored in the nucleus of an atom — the energy that holds the nucleus together. Very large amounts of energy can be released when the nuclei are combined or split apart. Nuclear power plants split the nuclei of uranium atoms in a process called fission. The sun combines the nuclei of hydrogen atoms in a process called fusion.
- *Gravitational Energy* is energy stored in an object's height. The higher and heavier the object, the more gravitational energy is stored. When you ride a bicycle down a steep hill and pick up speed, the gravitational energy is being converted to motion energy. Hydropower is another example of gravitational energy, where the dam *piles* up water from a river into a reservoir.
- *Electrical Energy* is what is stored in a battery, and can be used to power a cell phone or start a car. Electrical energy is delivered by tiny charged particles called electrons, typically moving through a wire. Lightning is an example of electrical energy in nature, so powerful that it is not confined to a wire.

Kinetic energy is motion — of waves, molecules, objects, substances, and objects.

- *Radiant Energy* is electromagnetic energy that travels in transverse waves. Radiant energy includes visible light, x-rays, gamma rays and radio waves. Light is one type of radiant energy. Sunshine is radiant energy, which provides the fuel and warmth that make life on Earth possible.
- *Thermal Energy*, or heat, is the vibration and movement of the atoms and molecules within substances. As an object is heated up, its atoms and molecules move and collide faster. Geothermal energy is the thermal energy in the Earth.
- *Motion Energy* is energy stored in the movement of objects. The faster they move, the more energy is stored. It takes energy to get an object moving and energy is released when an object slows down. Wind is an example of motion energy. A dramatic example of motion is a car crash, when the car comes to a total stop and releases all its motion energy at once in an uncontrolled instant.
- *Sound* is the movement of energy through substances in longitudinal (compression/rarefaction) waves. Sound is produced when a force causes an object or substance to vibrate — the energy is transferred through the substance in a wave. Typically, the energy in sound is far less than other forms of energy. (Adapted from: http://www.eia.doe.gov/kids/energy.cfm?page=about_forms_of_energy-forms, 25 August, 2010)



Match the items on the right with the items on the left.

- | | | | |
|---|--|---|----------------------|
| 1 | compressed springs | a | chemical energy |
| 2 | fission | b | electrical energy |
| 3 | wind | c | gravitational energy |
| 4 | molecules | d | mechanical energy |
| 5 | movement of energy in longitudinal waves | e | motion energy |
| 6 | movement of the atoms | f | nuclear energy |
| 7 | height | g | radiant energy |
| 8 | wire | h | sound |
| 9 | x-rays | i | thermal energy |



Complete the table with the correct forms of energy discussed in the text *Forms of Energy*.

Potential energy	Kinetic energy



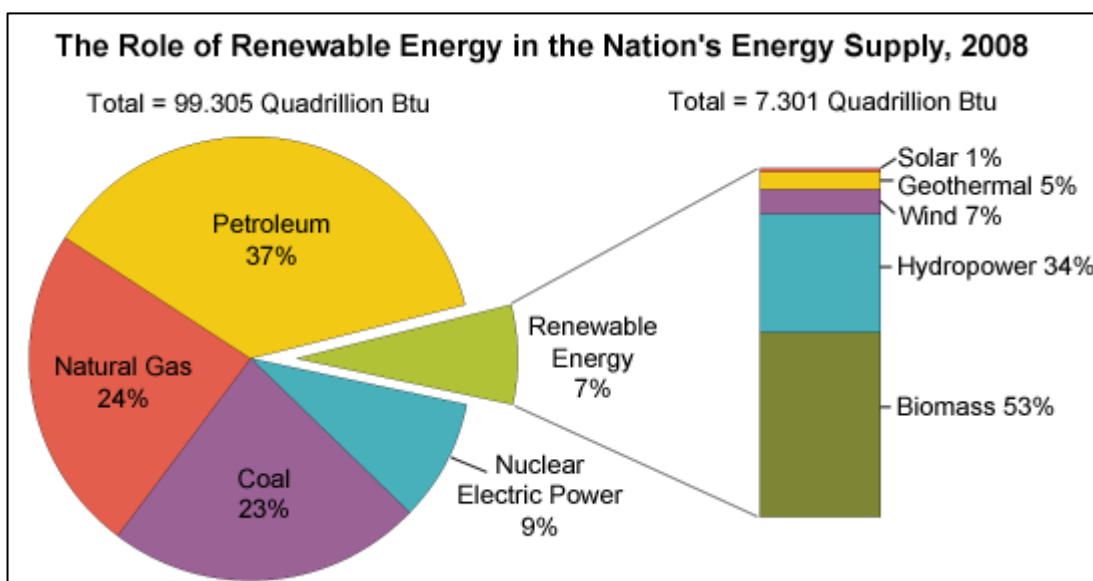
Read the text *Sources of Energy* and answer the following questions:

- How can we generate electrical power?
- What's the difference between renewable and non-renewable sources?
- Write 3 renewable sources of energy.
- Write 3 nonrenewable sources of energy.
- Explain the expression *fossil fuels*.

Sources of Energy

When we use electricity in our home, the electrical power was probably generated by burning coal, by a nuclear reaction, or by a hydroelectric plant at a dam. Therefore, coals, nuclear and hydro are called energy sources. When we fill up a gas tank, the source might be petroleum or ethanol made by growing and processing corn.

Energy sources are divided into two groups — renewable (an energy source that can be easily replenished) and nonrenewable (an energy source that we are using up and cannot recreate). Renewable and nonrenewable energy sources can be used to produce secondary energy sources including electricity and hydrogen.



Picture 9: Sources of Energy

Source: http://www.eia.doe.gov/kids/energy.cfm?page=about_home-basics (25 August, 2010)

Renewable energy sources include:

- solar energy from the sun, which can be turned into electricity and heat
- wind
- geothermal energy from heat inside the earth
- biomass from plants, which includes firewood from trees, ethanol from corn, and biodiesel from vegetable oil
- hydropower from hydroturbines at a dam

Nonrenewable Energy. We get most of our energy from nonrenewable energy sources, which include the fossil fuels — oil, natural gas, and coal. They're called fossil fuels because they were formed over millions and millions of years by the action of heat from the Earth's core and pressure from rock and soil on the remains (or *fossils*) of dead plants and creatures like microscopic diatoms. Another nonrenewable energy source is the element uranium, whose atoms we split (through a process called nuclear fission) to create heat and ultimately electricity.

We use renewable and nonrenewable energy sources to generate the electricity we need for our homes, businesses, schools, and factories. Electricity *energizes* our computers, lights, refrigerators, washing machines, and air conditioners, to name only a few uses.

Most of the gasoline used in our cars and motorcycles and the diesel fuel used in our trucks are made from petroleum oil, a nonrenewable resource. Natural gas, used to heat homes, dry clothes, and cook food, is nonrenewable. The propane that fuels our outdoor grills is made from oil and natural gas, both nonrenewable.

(Adapted from: http://www.eia.doe.gov/kids/energy.cfm?page=about_home-basics, 25 August, 2010)



Read the text about nonrenewable energy and complete the table.

energy	electricity	gasoline/petrol	natural gas	propane
What is it used for?				

7.2 ELECTRICAL POWER



Match the expressions with the correct pictures.

hydroelectric dam
steel tower

power grid
transformer

power plant
transmission substation



Read the text *Power Grid Distribution* and answer the following questions:

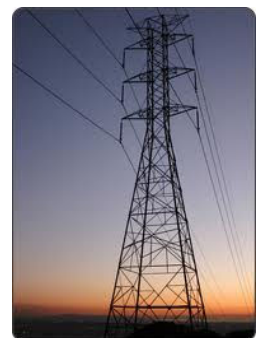
- Where can electrical distribution lines be located?
- When do we realize the importance of electricity in our daily lives?
- How does electricity get to our homes?

Power Grid Distribution

Power grid distribution lines can be above or under ground. Electrical power is a little bit like the air you breathe: You don't really think about it until it is missing. Power is just *there*, meeting your every need, constantly. It is only during a power failure, when you walk into a dark room and instinctively hit the useless light switch that you realize how important power is in your daily life. You use it for heating, cooling, cooking, refrigeration, light, sound, computation and entertainment. Without it, life can get somewhat cumbersome.

Power travels from the power plant to your house through an amazing system called the power distribution grid. The grid is quite public – if you live in a suburban or rural area, chances are it is right out in the open for all to see. It is so public, in fact, that you probably don't even notice it anymore. Your brain likely ignores all of the power lines because it has seen them so often.

(Adapted from: <http://science.howstuffworks.com/environmental/energy/power.htm>, 25 August, 2010)





Read the text *Power Grid Distribution* again and find the Slovenian expressions for the following:

- distribution line
- light switch
- power failure
- power grid
- power plant

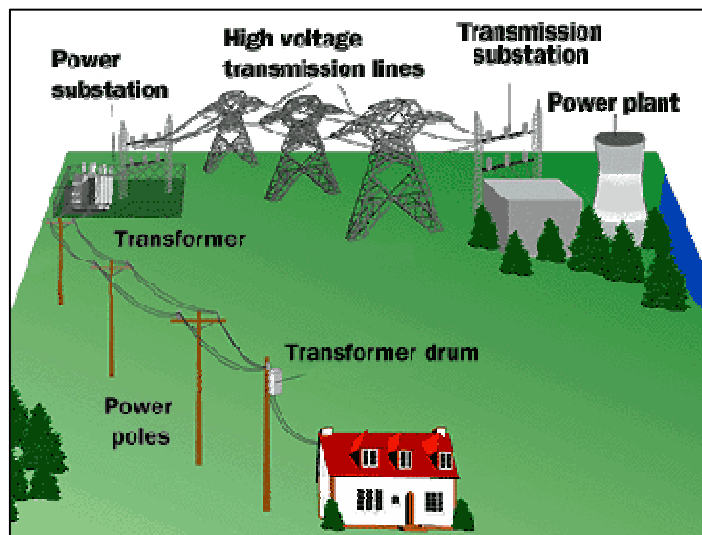
The Electrical Power Grid



Read the text *The Electrical Power Grid* and answer the following questions:

- Where does the electrical power start?
- What can spin the generator?
- In what way can steam be produced?
- What are typical voltages for long distance transmissions?
- How many phases do the steel transmission towers have?
- What is the function of the power substation?

The power plant. Electrical power starts at the power plant. In almost all cases, the power plant consists of a spinning electrical generator. Something has to spin that generator – it might be a water wheel in a hydroelectric dam, a large diesel engine or a gas turbine. But in most cases, the thing spinning the generator is a steam turbine. The steam might be created by burning coal, oil or natural gas. Or the steam may come from a nuclear reactor.



Picture 10: Electrical Power Grid

Source: <http://science.howstuffworks.com/environmental/energy/power.htm> (18 March, 2011)

Transmission substation. The three-phase power leaves the generator and enters a transmission substation at the power plant. This substation uses large transformers to convert the generator's voltage up to extremely high voltages for long-distance transmission on the transmission grid.

Typical voltages for long distance transmission are in the range of 155,000 to 765,000 volts in order to reduce line losses. A typical maximum transmission distance is about 300 miles

(483 km). High-voltage transmission lines are quite obvious when you see them. They are normally made of huge steel towers.

All power towers have three wires for the three phases. Many towers have extra wires running along the tops of the towers. These are ground wires and are there primarily in an attempt to attract lightning.

The distribution grid. For power to be useful in a home or business, it comes off the transmission grid and is stepped-down to the distribution grid. This may happen in several phases. The place where the conversion from *transmission* to *distribution* occurs is in a power substation. A power substation typically does two or three things:

- It has transformers that step transmission voltages (in the tens or hundreds of thousands of volts range) down to distribution voltages (typically less than 10,000 volts).
- It has a *bus* that can split the distribution power off in multiple directions.
- It often has circuit breakers and switches so that the substation can be disconnected from the transmission grid or separate distribution lines can be disconnected from the substation when necessary.

(Adapted from: <http://science.howstuffworks.com/environmental/energy/power.htm>, 25 August, 2010)



Read the text *Energy Conservation* and fill in the gaps with the correct form of the word in brackets.

Energy Conservation

Energy conservation is the practice of decreasing the quantity of energy used. It may be achieved through efficient energy use, in which case energy use is decreased while achieving a similar outcome, or by reduced ¹ _____ (consume) of energy services. Energy conservation may result in increase of financial capital, ² _____ (environment) value, national security, personal security, and human comfort. Individuals and organizations that are direct consumers of energy may want to conserve energy in order to reduce energy costs and promote economic ³ _____ (secure). Industrial and commercial users may want to increase ⁴ _____ (efficient) and thus maximize profit.

By reducing emissions, energy conservation is an important part of lessening climate change. Energy conservation facilitates the replacement of nonrenewable resources with ⁵ _____ (renew) energy. Energy conservation is often the most economical ⁶ _____ (solve) to energy shortages, and is a more environmentally benign alternative to increased energy ⁷ _____ (produce).

(Adapted from: http://en.wikipedia.org/wiki/Energy_conservation, 20 August, 2010)

7.3 PLACING AN ORDER



Order letters are very important in any business. There are many different ways to write order letters, but the ideal approach depends on condition and situation for each case.

Here are some tips:

1. Select your words carefully because your letter can be referenced at any time and you are responsible for its contents.

2. Stick to the same font and writing style.
3. Double check your order letter for grammar and spelling mistakes.
4. Provide detailed information.



Read the dialogue *Placing an Order on the Telephone* and answer the following questions:

- Who is interested in placing an order?
- What is the article of the order?
- When would Jane like to get the ordered articles?
- Which information does the estimate include?
- What is the delivery period?

Placing an Order on the Telephone

Jane: Hello, this is Jane Tegal from Excellerator Co. calling. May I speak to Mr. Mitchell?

Arthur: Hello Ms Tegal, this is Arthur Mitchell.

Jane: Hello, I'd like to place an order for a number of your Millennium desk units.

Arthur: Certainly. How many were you interested in ordering for purchase?

Jane: Quite a few. Do you have many available in the warehouse?

Arthur: We keep a large supply in stock. There's also a showroom with quite a few on hand. It shouldn't be a problem.

Jane: Well then. I'd like 75 units by the end of the month. Could I get an estimate before I place an order?

Arthur: Certainly, I'll have it for you by the end of the day.

Jane: What does the estimate include?

Arthur: Estimates include merchandise, packaging and shipping, duty if required, any taxes and insurance.

Jane: Do you ship door-to-door?

Arthur: Certainly, all shipments are door-to-door. Delivery dates depend on your location, but we can usually deliver within 14 business days.

Jane: Thank you. I look forward to your estimate.

Arthur: Of course. You'll get it by the end of the day. Bye.

(Adapted from: http://esl.about.com/od/businessreading/a/d_porder.htm, 10 April, 2011)



Role-play the dialogue.



Revise the business letter form (2.4 Writing business letters) and write a purchase order including the following information.

You are the Sales Manager of the gas supply company SoCal Gas Supply, 516 Carhays Park, Cardiff CF1 9UJ.

Your company is renovating the offices and you need new furniture. You have already received their Spring Catalogue 2011 and would like to place an order for:

- 5 divans and mattresses 700 cm x 480 cm
- 3 bookcases
- 4 coffee tables
- 6 armchairs

Place an order and invent the measures of the furniture and the prices.

Include the following:

- Use the catalogue as reference.
- Thank them for their last letter of April 26th, catalogue and the price-list.
- Tell them that you expect the delivery in the next 6 weeks.
- Ask them to email you in case of any problems.
- Ask them for the acknowledgement of your order.

Write to: Mr. John Fairfax, Homemakers Ltd., 56 Riverside, Northampton NH H3 4FJ.

Summary

Energy is found in different forms including light, heat, chemical, and motion. They can all be put into two categories: potential and kinetic.

Energy sources are divided into two groups — renewable (solar energy, wind and hydropower) and non-renewable (oil, natural gas and coal).

Electrical power starts at the power plant and comes to our houses through the power distribution grid.

Energy conservation is the practice of decreasing the quantity of energy used. By reducing emissions, energy conservation is an important part of lessening climate change. Energy conservation facilitates the replacement of nonrenewable resources with renewable energy.

In this unit we discussed the energy, made a telephone call and placed a purchase order.

Revision



Think of other sources of energy (solar, wind, natural gas, oil ...), choose one and describe how it works in about 150 words.

8 WASTE MANAGEMENT

After this unit you will be able to:

- define and describe various types of waste and waste containers;
- use English for specific purposes on topic of chemicals and hazardous materials;
- speak about waste disposal and environmental protection;
- speak about recycling;
- describe graphs.



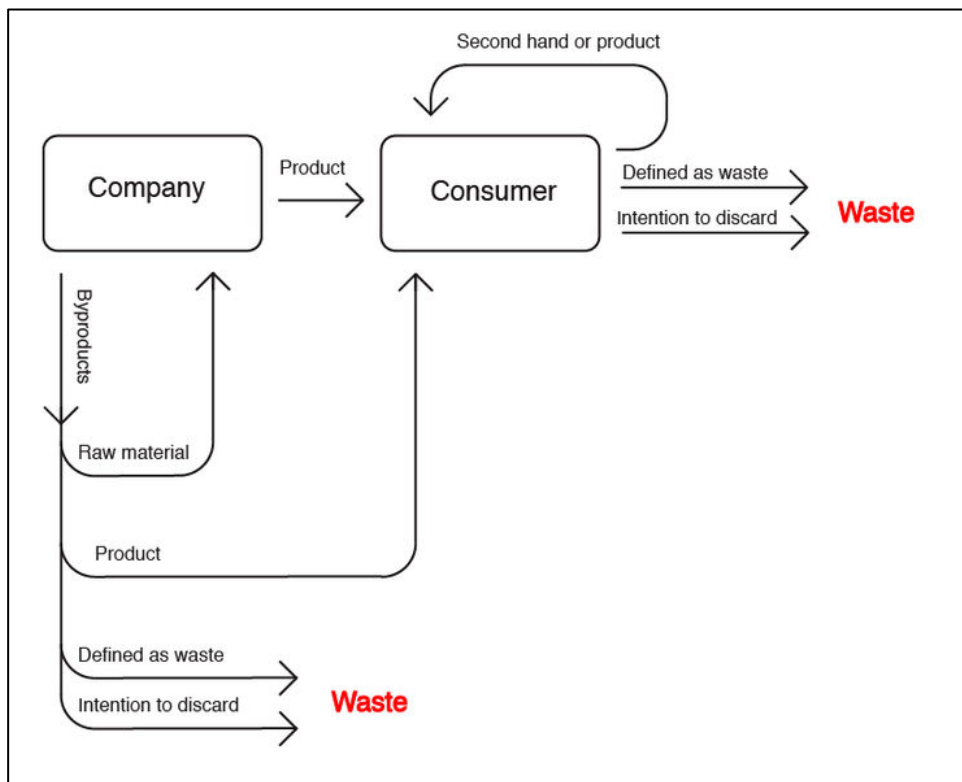
What is waste? What kinds of waste do we produce? What can we do to reduce waste production? Write down some of your ideas and discuss them with other students.



Look at the EU legal definition of *waste* and answer the following questions:

- Which EU Directive defines waste?
- What is *waste* according to this Directive?

Under the Waste Framework Directive (European Directive 75/442/EC as amended), the European Union defines waste as an object the holder discards, intends to discard or is required to discard. (Adapted from: <http://en.wikipedia.org/wiki/Waste>, 23 March, 2011)



Picture 11: What is Waste?

Source: http://en.wikipedia.org/wiki/File:European_legal_definition_of_waste.png
(23 March, 2011)



Match the *waste* collocations on the left with the correct definitions on the right.

- | | |
|--------------------------|--|
| 1. hazardous waste | a. material that has served its use and has been discarded for disposal. |
| 2. industrial waste | b. collection, processing, recycling or disposal of waste materials to reduce their effect on environment |
| 3. municipal solid waste | c. discarded materials containing substances known to be dangerous to humans or other life-forms |
| 4. postconsumer waste | d. waste from manufacturing, trade, or business |
| 5. waste management | e. waste that includes predominantly household waste, sometimes also commercial waste collected in a certain area. |



Use a dictionary and look up other expressions for waste:

- garbage
- refuse
- rubbish
- trash
- litter



Read the text *Hazardous Waste* and answer the following questions:

- Explain the expression *from the cradle to the grave*.
- What risk do mixtures of various hazardous wastes present?
- What are the criteria for EU waste classification?

Hazardous Waste

Hazardous wastes pose a greater risk to the environment and human health than non hazardous wastes and thus require a stricter control regime. This is laid down in Directive 91/689/EEC, as amended by Directive 94/31/EC. It provides additional record keeping, monitoring and control obligations from the *cradle to the grave*, i.e., from the waste producer to the final disposal or recovery. In addition higher attention is required when different categories of hazardous wastes are mixed with each other or with non hazardous wastes in order to prevent risks for the environment and human health. Moreover, the permit exemptions that may be granted to installations dealing with hazardous wastes are more restrictive than for installations dealing with other wastes.



The classification into hazardous and non hazardous waste is based on the system for the classification and labelling of dangerous substances and preparations, which ensures the application of similar principles over their whole life cycle. (Adapted from: http://ec.europa.eu/environment/waste/hazardous_index.htm, 12 August, 2010)



Look at the list of waste classification and do the exercise below.

Table 2: Excerpt from Waste List Decision 2000/532/EC

02	Wastes from agricultural, horticultural, hunting, fishing and aquacultural primary production, food preparation and processing
03	Wastes from wood processing and the production of paper, cardboard, pulp, panels and furniture
04	Wastes from the leather, fur and textile industries
12	Wastes from shaping and surface treatment of metals and plastics
13	Oil wastes (except edible oils, 05 and 12)
17	Construction and demolition wastes (including road construction)
18	Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)
19	Wastes from waste treatment facilities, off-site waste water treatment plants and the water industry

Source: http://ec.europa.eu/environment/waste/hazardous_index.htm (12 August, 2010)



Look at the following pictures and try to match them with the classification numbers above.



03



8.1 WASTE CONTAINERS



How do we dispose of waste? What do you know about waste collection and waste sorting? What is recycling?



Read the text *Waste Management Juiced by Solar Trash Cans* and answer the following questions:

- What is the name of a new trash can?
- Who purchased 15 trash cans?
- Why is this trash collector special?
- What is the trash collector made of?

Waste Management Juiced by Solar Trash Cans



Who knew America's mayors were so interested in trash?

Garbage removal heavyweight Waste Management announced this week at the U.S. Conference of Mayors that it will distribute BigBelly Solar's solar-powered trash compactor in North America.

Waste Management expects to sell them to municipal governments and other organizations responsible for garbage at public places, such as sports venues. Fifteen of the BigBelly Solar units are installed at a retail center adjacent to Gillette Stadium in Foxborough, Mass., home of the New England Patriots. Numerous cities and towns in the U.S. have also purchased them.

The BigBelly Solar compactors look like a typical street-side trash can except they are outfitted with solar panels on the top. The solar panel powers a motor that crushes the trash, which means that pick-ups can be done less often. The newest versions of the compactors are now network-equipped to send a signal when they are full.

The compactors themselves are made from recycled materials and work in areas that don't receive direct sunlight, said Richard Kennelly, vice president of marketing for BigBelly Solar, in a statement.

The exclusive distribution deal with Waste Management is a big win for Needham-based BigBelly Solar which was started a few years ago and quickly found receptive customers in city mayors in Boston, Philadelphia, and other places.

The company raised an additional \$ 3.2 million from undisclosed investors, according to an SEC filing made public last month.

(Adapted from: http://news.cnet.com/8301-11128_3-10263555-54.html, 12 August, 2010)



Read the text *Waste Management Juiced by Solar Trash Cans* again and find the Slovenian expressions for the following:

- retail center
- solar compactor
- solar panel
- trash compactor
- waste management



Read the text *What is a Waste Container?* and answer the following questions:

- What is a waste container?
- What is it made of?
- Which are the three types of curbside waste containers?
- What is the vehicle for collecting waste called?
- What is the common size of a household wheelie bin?

What is a Waste Container?

A waste container is a container for temporarily storing waste, and is usually made out of metal or plastic. Common terms are dustbin, rubbish bin, litter bin, garbage can, trash can, trash bin, dumpster, waste basket, waste paper basket, waste receptacle, container bin, bin and kitchen bin. The words *rubbish*, *basket* and *bin* are more common in British English usage; *trash* and *can* are more common in American English usage.

Curbside waste containers consist of three types: trash cans (receptacles often made of tin, steel or plastic), dumpsters (large plastic or steel waste receptacles) and wheelie bins (light, usually plastic bins that are mobile). All of these are emptied by collectors, who will load the contents into a garbage truck and drive it to a landfill, incinerator or consuming crush facility to be disposed of. The standard-sized UK wheelie bin household collection is 240 litres or more. (Adapted from: http://en.wikipedia.org/wiki/Waste_container, 12 August, 2010)



a trash can



a wheelie bin



a dumpster



Fill the gaps with the correct words.

*aluminium
materials*

*differentiate
multiple-bin*

*green
products*

*indicate
recycling*

Recycling 1

In some areas there is also a recycling service, often with one or more dedicated bins intended to receive items that can be recycled into new ¹ _____. These bins are separated into different categories, usually represented by colours, which determine what ² _____ can be inserted into the bin. The contents of the bins are taken to a recycling plant to be processed, and there are various systems for recycling-bin collection: single-bin-combined stream systems, ³ _____ systems, and cyclic collections with different materials collected on different days.



A recycling bin is a container used to hold recyclables before they are taken to ⁴ _____ centers. Recycling bins exist in various sizes for use in homes, offices, and large public facilities. Separate containers are often provided for paper, tin or ⁵ _____ cans, and glass or plastic bottles.

Many recycling bins are designed to be easily recognisable, and are marked with slogans promoting recycling on a blue or ⁶ _____ background. Others are intentionally unobtrusive. Bins are sometimes different colors so that recyclers may ⁷ _____

between the types of materials to be placed in them. Blue bins usually indicate metals and plastics and green or red ⁸ _____ papers.

(Adapted from: http://en.wikipedia.org/wiki/Recycling_bin, 12 August, 2010)

8.2 WASTE COLLECTION VEHICLES



A waste collection vehicle (WCV), also called a *garbage truck* or *dustbin lorry* is a truck specially designed to collect smaller quantities of waste and transport it to landfills and other recycling or treatment facilities. They are a common sight in most urban areas.



Match the pictures with the descriptions.

There are five basic models of waste collection vehicles:



- a *A front loader* usually services commercial and industrial businesses using large waste containers with lids known as dumpsters. The truck is equipped with automated forks on the front which the driver carefully aligns with sleeves on the waste container using a set of levers. The waste container is then lifted over the truck. Once it gets to the top the container is then flipped upside down and the waste or recyclable material is emptied into the vehicle's hopper. Once the waste is dumped, it is compacted by a large blade called a *packer blade* that pushes the waste to the rear of the vehicle.
- b *A grapple truck* is used for collecting bulk waste. Many solid waste items are too large or too heavy to be safely lifted by hand into a traditional WCV. These items (furniture, large appliances, branches, logs) are called bulky waste or *oversized*. The preferred method for collecting these items is with a grapple truck. Grapple trucks have hydraulic knucklebooms, tipped with a clamshell bucket, and usually include a dump body or trailer.

- c *A pneumatic collection WCV* has a crane with a tube and a mouthpiece that fits in a hole, usually hidden under a plate under the street. From here it will suck up waste from an underground installation. The system usually allows the driver to *pick up* the waste, even if the access is blocked by cars, snow or other barriers.
- d *A rear loader* has an opening at the rear that a waste collector can throw waste bags or empty the contents of bins into. Often in many areas they have a lifting mechanism to automatically empty large carts without the operator having to lift the waste by hand. Another popular system for the rear loader is a rear load container specially built to fit a groove in the truck. The truck will have a chain or cable system for upending the container. The waste will then slide into the hopper of the truck.
- e *A side loader* is loaded from the side, manually or with an automated lift. Lift-equipped trucks are referred to as automated side loaders. The refuse is then compacted towards the rear of the truck. (Adapted from: http://en.wikipedia.org/wiki/Garbage_truck, 12 August, 2010)



Read the text *Waste* and fill in the gaps with the correct form of the word in brackets.

Waste

Waste is unwanted or undesired material left over after the ¹ _____ (complete) of a process. *Waste* is a human concept: in natural processes there is no waste, only inert end products.



Waste can exist in any phase of matter (solid, liquid, or gas). When released in the latter two states, gas ² _____ (especial), the wastes are referred to as emissions. It is usually strongly linked with ³ _____ (pollute).

Waste produced in the wild is reintegrated through natural ⁴ _____ (recycle) processes, such as dry leaves in a forest decomposing into soil. Outside of the wild these wastes may become ⁵ _____ (problem), such as dry leaves in an urban environment. The highest volume of waste, outside of nature, comes from human ⁶ _____ (industry) activity: mining, industrial manufacture, consumer use, and so on. Almost all manufactured products are destined to become waste at some point in time, with a volume of waste production roughly similar to the volume of resource ⁷ _____ (consume).

Post-consumer waste is the waste produced by the end-user (the garbage one puts outside in the trash can). This is the waste people usually think of. But though the most ⁸ _____ (vision), this is very small compared to the waste created in the process of mining and ⁹ _____ (produce).

(Adapted from: <http://en.wikipedia.org/wiki/Rubbish>, 12 July, 2010)

8.3 METHODS OF WASTE DISPOSAL



Read the text *Methods of Waste Disposal* and answer the following questions:

- What is the most common method of waste disposal?
- Where are landfills usually located?
- What are the advantages (if any) and disadvantages of a landfill?
- Where are incinerators usually located?
- What are the advantages and disadvantages of an incinerator?
- What is recycling?
- What materials are usually recycled?

The most common path of mixed municipal waste is source separation and collection followed by reuse and recycling of the non-organic fraction and energy and compost/fertilizer production of the organic waste fraction. Non-metallic waste resources are not destroyed with incineration, and can be reused/recycled in a future resource depleted society.

Landfill. The most common practice in most countries is still disposing of waste in a landfill which involves burying the waste.



Landfills were often established in abandoned or unused quarries, empty mines or pits. A properly designed and well-managed landfill can be a hygienic and relatively inexpensive method of disposing of waste materials. Older, poorly designed or poorly managed landfills can create a number of adverse environmental impacts such as wind-blown litter or attraction of vermin. Another common byproduct of landfills is gas which can create odour problems, kill surface vegetation, and is a greenhouse gas.

Deposited waste is normally compacted to increase its density and stability, and covered to prevent attracting vermin. Many landfills also have landfill gas extraction systems installed to extract the landfill gas. Gas is pumped out of the landfill using perforated pipes and flared off or burnt in a gas engine to generate electricity.

Incineration is a disposal method in which solid organic wastes are subjected to combustion so as to convert them into residue and gaseous products.



This method is useful for disposal of residue of both solid waste management and solid residue from waste water management. This process reduces the volumes of solid waste to 20–30 % of the original volume. Incineration and other high temperature waste treatment systems are sometimes described as thermal treatment. Incinerators convert waste materials into heat, gas, steam and ash.

Incineration is used to dispose of solid, liquid and gaseous waste. It is recognized as a practical method of disposing of certain hazardous waste materials (such as biological medical waste). Incineration is a controversial method of waste disposal, due to issues such as emission of gaseous pollutants.

Incineration is common in countries where land is scarcer, as these facilities generally do not require as much area as landfills. Waste-to-energy (WtE) or energy-from-waste (EfW) are broad terms for facilities that burn waste to generate heat, steam or electricity. Combustion in an incinerator is not always perfect and there have been concerns about pollutants in gaseous emissions which may have serious environmental consequences.

Recycling plant. Recycling refers to the collection and reuse of waste materials such as empty beverage containers. The materials from which the items are made can be reprocessed into new products.



Material for recycling may be collected separately from general waste using separation bins and collection vehicles, or sorted directly from mixed waste streams.

The most common consumer products recycled include aluminum such as beverage cans, copper such as wire, steel food and aerosol cans, old steel furnishings or equipment, polyethylene and PET bottles, glass bottles and jars, paperboard cartons, newspapers, magazines and light paper, and corrugated fiberboard boxes.

(Adapted from: http://en.wikipedia.org/wiki/Waste_management, 25 March, 2011)



Read the text *Methods of Waste Disposal* again and find the Slovenian expressions for the following:

- deplete
- disposal
- environmental impact
- fertilizer
- incineration
- landfill
- residue



Fill the gaps in the text with the following words.

bins cardboard composted consumption environmental
landfills pollution reused separation water

Recycling 2

Recycling is the process of turning used products into raw materials that can be used to make new products. Its purpose is to conserve natural resources and reduce ¹ _____.

Recycling reduces energy ² _____, since it generally takes less energy to recycle a product than to make a new one. Similarly, recycling causes less pollution than manufacturing a new product, and conserves raw materials.



It also decreases the amount of waste sent to ³ _____ or incinerators. Although people have always reused things, recycling as we know it today emerged as part of the modern ⁴ _____ movement.

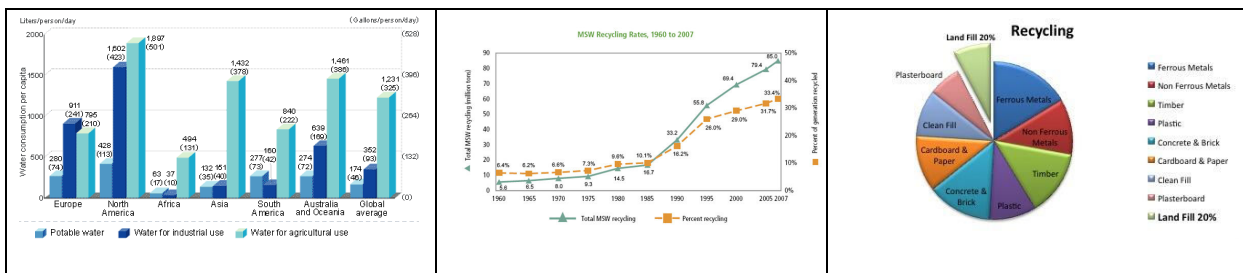
The most commonly recycled household items are paper, ⁵ _____, metal, glass, plastic containers, packaging and yard waste. Recycling the recovered materials is simple for metals and glass; they can be melted down, reformed, and ⁶ _____. Yard waste can be ⁷ _____ with little or no equipment. Paper, the most important recycled material, must be mixed with ⁸ _____, and sometimes de-inked, to form a pulp that can be used in papermaking. Plastics recycling requires an expensive process of ⁹ _____ of different resins.

Depending on the type, plastics can be recycled into anything from fiberfill to polyester-like fibers, to blue recycling ¹⁰ _____, or plastic lumber furniture. Fleece is an example of a textile that can be produced from recycled plastics. While many companies still rely on *virgin* polyester to produce fleece, there are now several *eco-fleece* products on the market that are made primarily or entirely from recycled bottles.

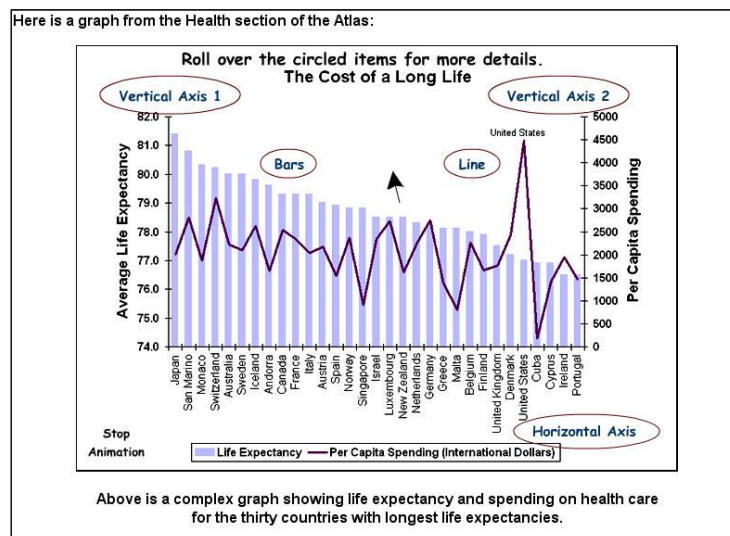
(Adapted from: <http://www.eoearth.org/article/Recycling>, 25 March, 2011)

8.4 HOW TO READ A GRAPH

A graph is a picture of information. The picture provided by a graph can enable us to see information more quickly than having to read a table of data.



A graph is information represented in the form of a picture, diagram or drawing. There are different types of graphs. Some of them are: a bar graph, a line graph and a pie chart.



Picture 12: How to Read a Graph

Source: <http://ucatlas.ucsc.edu/howto/graph.html> (4 June, 2010)

There are three main elements in a graph:

- a vertical axis (the y-axis);
- a horizontal axis (the x-axis);
- at least one line or set of bars.

To understand a graph, do the following:

1. Read the title of the graph.
2. Read the labels and the range of numbers along the side (the scale or vertical axis), and the information on the bottom (horizontal) axis.
3. Determine what units the graph uses. This information can be found on the axis or in the legend.
4. Look for patterns, groups and differences.



Complete the table.

verb (action)	noun (thing)	Adjective (describes a noun)	Adverb (describes a verb)
to decline	a decline	dramatic	
to decrease		sharp	
to fall		slight	
to grow		steady	
to improve			
to increase			
to recover			
to reduce			
to rise			

Which adjective describes:

- a sudden, very large change?
- a sudden, large change?
- a very small change?
- a regular change (not sudden)?

	increase	decrease	
↑	rise	fall	↓
	go up	go down	

Summary

The European Union defines waste as an object the holder discards.

Hazardous wastes pose a greater risk to the environment and human health than non hazardous wastes and thus require a stricter control regime.

A waste container is a container for temporarily storing waste, and is usually made out of metal or plastic. Curbside waste containers consist of three types: trash cans, dumpsters and wheelie bins.

A waste collection vehicle is a truck specially designed to collect smaller quantities of waste and transport it to landfills and other recycling or treatment facilities. They are a common sight in most urban areas. The most common practice in most countries is still disposing of

waste in a landfill which involves burying the waste. In this unit we discussed the waste treatment and how to read a graph.

Revision



Look at the graph below and put it into words.



Picture 13: A Graph to Words

Source: https://www.wastereduction.gov.hk/en/quickaccess/stat_recycle.htm (4 June, 2010)

9 MUNICIPALITY

After this unit you will be able to:

- speak about town planning;
- order the cities according to their hierarchy;
- describe public parks and facilities;
- discuss urban traffic, problems and solutions;
- speak about road winter service;
- mark the key words and write a summary of an English professional text.



Do you live in a city? What is its function? Why is it located where it is? Which are the major institutions and facilities of a city?

9.1 TOWN PLANNING



Read the text *European Green City Index Released* and answer the following questions:

- How many European cities were included in the research?
- Which are the three top cities?
- Which categories were included in the research?
- Where in the category of transportation did Copenhagen rank first?
- What did the author want to achieve by publishing the survey?

European Green City Index Released

A sustainability ranking of 30 major European cities was released today in Copenhagen, the Scandinavian city that besides hosting the UN COP15 climate talks has been chosen as top scorer in the new European Green City Index.

The study sponsored by Siemens AG and developed by The Economist Intelligence Unit, ranked 30 major cities across Europe relative to one another in eight categories with 30 underlying qualitative and quantitative indicators.

The top cities, in ranked order:

1. Copenhagen, Denmark
2. Stockholm, Sweden
3. Oslo, Norway
4. Vienna, Austria
5. Amsterdam, the Netherlands

The new European city ranking analyzed cities by the following eight categories: CO₂, buildings, energy, transport, water, waste and land use, air quality and environmental governance.

Copenhagen ranked high in energy use as measured in percentage of renewable energy, and also in environmental governance, in which it tied for first with Helsinki, Stockholm and Brussels, all scoring a perfect 10 points.

Table 3: European Green City Index

Overall		CO ₂		Energy		Buildings		Transport						
City	Score	City	Score	City	Score	City	Score	City	Score					
1	Copenhagen	87,31	1	Oslo	9,58	1	Oslo	8,71	=1	Berlin	9,44	1	Stockholm	8,81
2	Stockholm	86,65	2	Stockholm	8,99	2	Copenhagen	8,69	=1	Stockholm	9,44	2	Amsterdam	8,44
3	Oslo	83,98	3	Zurich	8,48	3	Vienna	7,76	3	Oslo	9,22	3	Copenhagen	8,29
4	Vienna	83,34	4	Copenhagen	8,35	4	Stockholm	7,61	4	Copenhagen	9,17	4	Vienna	8,00
5	Amsterdam	83,03	5	Brussels	8,32	5	Amsterdam	7,08	5	Helsinki	9,11	5	Oslo	7,92
6	Zurich	82,31	6	Paris	7,81	6	Zurich	6,92	6	Amsterdam	9,01	6	Zurich	7,83
7	Helsinki	79,29	7	Rome	7,57	7	Rome	6,40	7	Paris	8,96	7	Brussels	7,49
8	Berlin	79,01	8	Vienna	7,53	8	Brussels	6,19	8	Vienna	8,62	8	Bratislava	7,16
9	Brussels	78,01	9	Madrid	7,51	9	Lisbon	5,77	9	Zurich	8,43	9	Helsinki	7,08
10	Paris	73,21	10	London	7,34	10	London	5,64	10	London	7,96	=10	Budapest	6,64
11	London	71,56										=10	Tallinn	6,64
12	Madrid	67,08												
13	Vilnius	62,77												
14	Rome	62,58												
15	Riga	59,57												
16	Warsaw	59,04												
17	Budapest	57,55												
18	Lisbon	57,25												
19	Ljubljana	56,39												
20	Bratislava	56,09												
21	Dublin	53,98												
22	Athens	53,09												
23	Tallinn	52,98												
24	Prague	49,78												
25	Istanbul	45,20												
26	Zagreb	42,36												
27	Belgrade	40,03												
28	Bucharest	39,14												
29	Sofia	36,85												
30	Kiev	32,33												

Water		Waste and land use		Air quality		Environmental governance					
City	Score	City	Score	City	Score	City	Score				
1	Amsterdam	9,21	1	Amsterdam	8,98	1	Vilnius	9,37	=1	Brussels	10,00
2	Vienna	9,13	2	Zurich	8,82	2	Stockholm	9,35	=1	Copenhagen	10,00
3	Berlin	9,12	3	Helsinki	8,69	3	Helsinki	8,84	=1	Helsinki	10,00
4	Brussels	9,05	4	Berlin	8,63	4	Dublin	8,62	=1	Stockholm	10,00
=5	Copenhagen	8,88	5	Vienna	8,60	5	Copenhagen	8,43	=5	Oslo	9,67
=5	Zurich	8,88	6	Oslo	8,23	6	Tallinn	8,30	=5	Warsaw	9,67
7	Madrid	8,59	7	Copenhagen	8,05	7	Riga	8,28	=7	Paris	9,44
8	London	8,58	8	Stockholm	7,99	8	Berlin	7,86	=7	Vienna	9,44
9	Paris	8,55	9	Vilnius	7,31	9	Zurich	7,70	9	Berlin	9,33
10	Prague	8,39	10	Brussels	7,26	10	Vienna	7,59	10	Amsterdam	9,11

Source: <http://www.commoncurrent.com/notes/2009/12/european-green-city-index-rele.html>
(25 March, 2011)

Copenhagen also ranked third in transportation; it has the highest rate of commute cycling of any major European city, with 36 percent of all trips taken by bicycle.

There is an obvious correlation in overall scores between the wealthier northern European cities and their poorer Eastern European counterparts, but the study did not include criteria for any direct economic or social factors.

Some of the specific underlying indicators for the European Green City Index included quantitative data points such as recycling rate, and use of public transportation along with other qualitative indicators (e.g. CO₂ reduction targets, efficiency standards for buildings).

The results of the Europe Green City Index will hopefully have the impact on European cities that other city sustainability rankings have achieved elsewhere with citizens, business, media and politicians: making urban sustainability performance more transparent, understandable within a class of peers, and subject to competition in *a race to the top*.

Some of our biggest challenges in cutting carbon to reduce global climate change will be in understanding the system dynamics that cities and other complex entities such as corporations, neighborhoods or even our households comprise. We no longer have the luxury of viewing our energy sources, food, water, buildings and land as separate, unrelated systems, even if business, government and academic institutions have been formulated according to

these silos. Nor can we view our cities as separate systems from nature, the global climate and our social fabric. (Adapted from: <http://www.commoncurrent.com/notes/2009/12/european-green-city-index-rele.html>, 25 March, 2011)



Read the text *European Green City Index Released* again and find the Slovenian expressions for the following:

- carbon
- commute cycling
- entity
- environmental governance
- recycling rate
- silo
- sustainability



Read the text *Town planning* and fill the gaps with the following subtitles.

- a *Origins of town planning*
- b *What do town planners do?*
- c *Planning to instill pride*
- d *Reforms for industry and society*

Town planning

Urban, city, and town planning integrates land use planning and transport planning to improve the built, economic and social environments of communities. The practice of town planning is much older than the modern profession. Humans have built towns and cities for thousands of years.

1

Alongside organic communities, planned cities and towns have also existed from ancient times. Often, they followed a simple grid laid over the landscape, with houses placed side by side along straight streets. In the Renaissance (15th century), rulers of city-states aimed to achieve grand effects, with bold geometry and large public areas. In the Baroque era (17th century), this tendency grew and monumental architectural and landscape ensembles were designed and built.

2

Creating beauty in towns and cities to inspire civic pride was also a feature of 19th-century park and city plans. Parks and recreational spaces were set aside for citizens' leisure. An example is New York's Central Park.

3

Town plans also took on broader social ideals in the 1800s in response to the industrial revolution. Workers in factory towns lived in crowded slums with poor drainage and little access to light and air. Social reformers in England proposed solutions ranging from public

health improvements to utopian communities. Some factory owners built model towns for their workers, to improve their wellbeing and productivity.

4

The modern profession of town planning mainly arose in response to the urban problems caused by rapid industrialisation from the late 19th century.

Town planners could either design entirely new urban areas (such as suburbs and garden cities), or develop ways to reform and reorder existing ones to provide plenty of space and light, clean water and adequate drainage (through urban renewal).

Early town plans concentrated on securing adequate provision for key urban needs:

- housing
- commercial and industrial uses
- railways and roadways
- water, sewerage and energy supply
- open space and recreational areas

Each element of a well-planned urban environment would work alone and as part of the whole. A town plan also had to be affordable, and to fit the designated site.

Planning today retains its commitment to ideal urban environments, but has to work within challenging political contexts. The task of reconciling competing development and environmental goals in the interests of “sustainability” usually falls to the planning function in government. Much attention is now directed at better managing existing cities than creating completely new ones. (Adapted from: http://www.idealcity.org.au/town_planning-6-what_planners_do.html, 25 March, 2011)



Settlement hierarchy

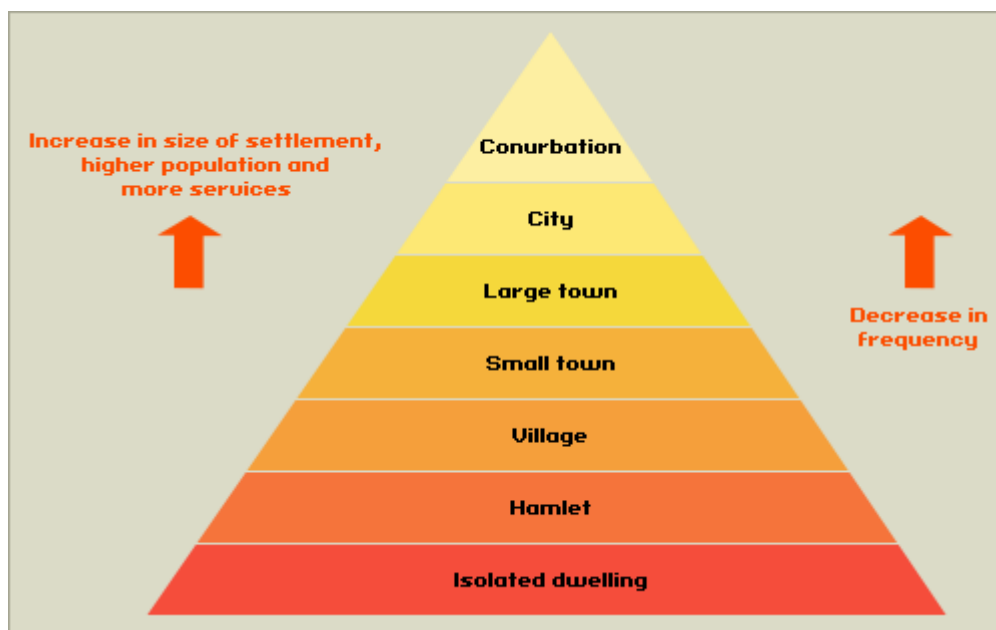
A settlement hierarchy is a way of arranging settlements into a hierarchy based upon their population or some other criteria. The greater the population in a settlement, the larger geographic area, the higher the status and the greater the availability of services. Position in a settlement hierarchy can also depend on the sphere of influence. This is how far people will travel to use the services in the settlement; if people travel further the town becomes more important and ranks higher in settlement hierarchy.

In this example, an isolated building is at the lowest point, and the ecumenopolis is at the top with the greatest number of people.

- *Ecumenopolis* – the entire area of earth that is taken up by human settlements.
- *Megalopolis* – a group of conurbations, consisting of more than ten million people each.
- *Conurbation* – a group of large cities and their suburbs, consisting of three to ten million people.
- *Metropolis* – a large city and its suburbs consisting of multiple cities and towns. The population is usually one to three million.
- *Large city* – a city with a large population and many services. The population is less than 1 million people but over 300,000 people.
- *City* – a city would have abundant services, but not as many as a large city. The population of a city is over 100,000 people up to 300,000.
- *Large town* – a large town has a population of 20,000 to 100,000.

- *Town* – a town has a population of 1,000 to 20,000.
- *Village* – a village generally does not have many services, possibly only a small corner shop or post office. A village has a population of 100 to 1,000.
- *Hamlet* – a hamlet has a tiny population (less than 100) and very few (if any) services, and few buildings.
- *Isolated dwelling* – an isolated dwelling would only have 1 or 2 buildings or families in it. It would have negligible services, if any.

(Adapted from: http://en.wikipedia.org/wiki/Settlement_hierarchy, 25 March, 2011)



Picture 14: Settlement Hierarchy

Source:

http://www.geographyalltheway.com/igcse_geography/population_settlement/settlement/settlement_characteristics.htm (25 March, 2011)



Match the items on the right with the items on the left.

- | | | | |
|---|----------------------|---|-------------|
| 1 | Prague (1,242,000) | a | city |
| 2 | Ljubljana (271,885) | b | conurbation |
| 3 | Nova Gorica (13,150) | c | large city |
| 4 | Oslo (876,000) | d | large town |
| 5 | Paris (9,645,000) | e | megalopolis |
| 6 | Celje (37,777) | f | metropolis |
| 7 | Tokyo (33,200,000) | g | town |



Read the text *Height Restriction Laws* and fill in the gaps with the correct form of the word in brackets.

Height Restriction Laws

Height restriction laws are laws that restrict the maximum height of structures. There are a variety of reasons for these measures. Some restrictions limit the height of new buildings so

as not to block views of an older work decreed to be important landmark by a
¹ _____ (govern).

For example, In the Tsarist Russian capital of Saint Petersburg, buildings cannot be taller than the Winter Palace, and in Washington, D.C., no building can be more than 20 feet (6 m) taller than the
² _____ (wide) of the street on which it sits due to the Heights of Buildings Act of 1910.



In Hong Kong, People's Republic of China, to protect the ridge line along Hong Kong Island and in Kowloon, height restrictions are imposed according to the
³ _____ (locate) of the buildings or structures.

In Bali, Indonesia, a
⁴ _____ (build) cannot be higher than a palm tree, which is about 20 meters. The only building that is higher than a palm tree is the Bali Beach Hotel because the hotel was built before the height
⁵ _____ (restrict) was announced.

In Europe, there is no official general law restricting the
⁶ _____ (high) of structures. However, there are height restriction laws in many cities, often aimed to protect
⁷ _____ (history) skylines.

In the United States, both the U.S. Federal Aviation
⁸ _____ (authorize) (FAA) and the Federal Communications Commission (FCC) have a rebuttable presumption not to build any antennae over 2,000 ft. This is to prevent those structures from being a hazard to air navigation. For airports, sometimes there are exceptions for height restrictions made for important infrastructure
⁹ _____ (equip), as radio towers or for structures older than the airport. These structures have to be marked with red and white paint, have flight
¹⁰ _____ (safe) lamps on top, or both.

(Adapted from: http://en.wikipedia.org/wiki/Height_restriction_laws, 26 March, 2011)

9.2 URBAN TRAFFIC



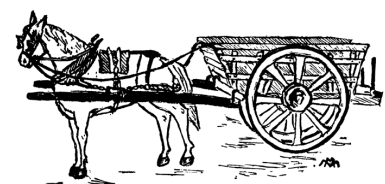
Match the expressions with the correct pictures.

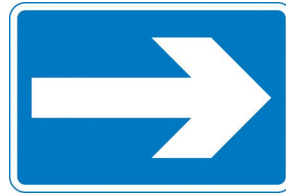
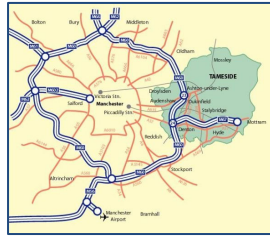
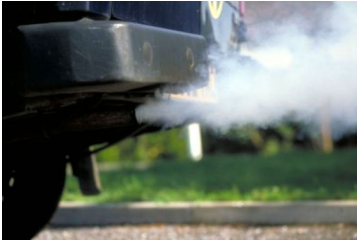
by-pass
park and ride

congestion
pedestrian zone

exhaust fumes
public transport

horse and cart
one way street
ring road





Read the text *Urban Problems – Traffic Congestion* and answer the following questions:

- Which are the two main problems of modern cities?
- What causes traffic congestion?
- Write two congestion solving measures.

Urban Problems – Traffic Congestion

There are two main problems that modern day cities face, namely urban decay when parts of the city become run down and undesirable to live in, and traffic congestion.

Traffic congestion is caused by:

- many people working in the city centres which may have narrow streets;
- shortage of off-street parking which means people park on the roads and so increase congestion;
- people not using public transport – either because it is less convenient, too expensive or not available;
- more people own and use cars.



As an example of how bad traffic jams now are, a hundred years ago it took about one hour to travel a 25-kilometre distance from the suburbs of a city to the city centre by horse and cart. Today it takes longer by car. Besides causing aggravation, stationary traffic causes severe air pollution from exhaust fumes.

Various solutions to these problems have been tried.

- Ring roads and by-passes; these can be unpopular as countryside around towns and cities are lost when they are built.
- Park and ride – you park your car on the edge of the built up area and then ride a bus or train into the city centre.
- One way streets to speed up traffic flow.
- Multi-storey car parks.

- Banning cars from the city centres, either with pedestrian zones or by stopping them coming into the city centre at all.
- Charging car drivers when they enter the city centre.

A complete solution to traffic congestion needs people to be able and willing to travel on public transport more. (Adapted from: <http://www.scalloway.org.uk/sett16.htm>, 26 March, 2011)

Traffic Signs



Read the text *The Purpose of Traffic Signs* and answer the following questions:

- What is the purpose of traffic signs?
- What information can traffic signs convey?
- What does the need for traffic signs depend on?
- Which basic conditions do the traffic signs have to fulfil?

The Purpose of Traffic Signs

Traffic signs, signals and markings are provided to convey messages to road users. Road traffic signs may either contain instructions, warning or information.

The need for traffic signs grows in proportion to the density of traffic, speed of operation, the complexity of the road and street system, as well as the complexity of maneuvering areas on freeways and at interchanges and intersections.

To be effective, the installation of each device should:

- conform to required standards;
- fulfil a road user need;
- give adequate time for proper response by drivers;
- be comprehensive and give the information required;
- convey a clear, simple meaning or message at a glance.



(Adapted from: <http://www.transport.gov.za/library/legislation/roadtraffic/02purpose.html>, 26 March, 2011)



Read the text *Resident Permit Parking Information* and fill in the gaps with the correct form of the word in brackets.

Resident Permit Parking Information

A residential permit parking system may be considered for streets or neighbourhoods that are affected by severe parking pressures from major parking generators such as schools, hospitals or busy ¹ _____ (commerce) areas.



Residential parking permits may only be purchased by residents that live within the specified permit zone. Vehicles parked in ² _____ (resident) permit zones must display a valid area permit to avoid being ticketed and ³ _____ (enforce) is done by regular patrol. Streets with residential permit

restrictions are typically combined with unregulated, or more commonly, time limited
4 _____ (regulate) to allow for visitor parking.

The issue and control of residential parking permits is the 5 _____ (responsible)
of the Engineering Department.

Motorists displaying a valid permit for people with disabilities are allowed to park in areas
where there are residential 6 _____ (restrict) for up to 3 hours.
(Adapted from: http://vancouver.ca/engsvcs/parking/admin/rpp_gen.htm, 26 March, 2011)

9.3 GREEN SPACES IN THE CITY



Which is the nearest public park? What are some things parks are used for? Would you live in a city with no parks? If there is a large vacant lot near you, would you rather have it converted into a hospital, a sports stadium, a housing project, or a park? Consider the importance of each facility in a city.



Read the text *Mainau Island* and answer the following questions:

- Who designed the park on the Mainau Island?
- Where is the park located?
- Write down 5 plants that grow on the island.
- Which animals can you see on the island?

Mainau Island

In 1931, Count Lennart Bernadotte was given the somewhat overgrown 45-hectare island in Lake Constance by his father and he set about transforming it into a paradise of flowers and plants.

Today it is one of the most popular and well-known excursion destinations in Germany. The majestic baroque palace buildings are in perfect harmony with their surroundings, one of Europe's most beautiful parks. Colours, scents and a thousand splendours – there is something new to experience on the island of Mainau every day of the year. Palm trees, oranges and other exotic treasures flourish here.



The exotic colours of the flowerbeds bring the park to life between March and October. In the spring there are beds of tulips as far as the eye can see and a beautiful display of orchids in the palm house. Summertime brings wonderful roses, in autumn the dahlias bloom.

There is a tremendous wealth of amazing sights on Mainau Island. During the warmer months, the paths to the Arena of Fountains are lined with tropical plants. In spring and summer, the flowers on the steps of the Italian flower and water staircase create magnificent designs.

The fragrance, beauty and elegance of more than 20,000 roses from 1,200 different species make the rose garden an enchanting, sensory experience. The herb garden presents a wide

range of well-labelled medicinal and cooking herbs and spices, and the impressive arboretum completes the island's fascinating park.

Germany's largest butterfly house is also well worth a visit, as is the farm with its ponies, donkeys and rare breeds of farm animals, such as brown mountain sheep, and a farmer's garden.

(Adapted from: http://www.germany-tourism.de/ENG/culture_and_events/museums_tlmuseum-id1123-fstadt_museum_main.htm, 26 March, 2011)



Read the text and fill in the gaps with the correct form of the word in brackets.

The park is a well-used place. People of ¹ _____ (differ) ages, genders, and backgrounds use a park on a regular basis during all parts of the day, week and year. A good park is visible and easily ² _____ (access) by various means of transportation. A park should be ³ _____ (comfort), with a good image and possess such amenities as seating, ⁴ _____ (inform), food concessions, bike racks, and bulletin boards. These elements make a park not only ⁵ _____ (attract) but enticing for people of all ages. Most of all, a park should be a ⁶ _____ (society) place where people go to observe the passing scene, meet friends, and interact with a wide range of people different from themselves.



(Adapted from: http://www.class.uidaho.edu/communityresearch/park_design.htm, 26 March, 2011)



Fill the gaps in the text *Emscher Park* with the given words.

commercial
environmentally

design
plants

development
residential

employ
restored

Emscher Park

It is useful to look at Emscher Park in Germany as a case study of park ¹ _____. Designers implemented a reuse scheme in this park, where some of the older buildings were ² _____ and used as museum pieces and a cultural center.



Over 1300 companies exist in Emscher Park. They ³ _____ over 17,000 people. There is no housing for employees inside the park, but there are ⁴ _____ areas just outside the park's boundaries.

The business section of the park is for light manufacturing, distribution, and ⁵ _____ activities. Inside the park, certain areas are zoned for businesses, commercial and industrial ⁶ _____. When dealing with the landscape designers took a conservation approach. By retaining the existing topography and specified native ⁷ _____, they preserved the site's natural character.

The reuse of older buildings that were already on the site, and working around the businesses that already existed made this project successful, economically and ⁸ _____.
(Adapted from: http://www.class.uidaho.edu/communityresearch/park_design.htm, 26 March, 2011)

9.4 WINTER SERVICE



Read the text *Pre-Treatment, Post-Treatment and Snow Clearing* and answer the following questions:

- What does pre-treatment in winter service include?
- What is post-treatment?
- What equipment is used for snow clearing?
- Which public facilities have priority for winter service?

Pre-Treatment, Post-Treatment and Snow Clearing

Pre-treatment, post-treatment and snow clearing are not carried out on all roads and only a very limited area in pedestrianised town centres.

Pre-treatment is the application of salt to carriageways to prevent frost and ice forming on the road surface. Brine is a saline solution that is sprayed on to pedestrian areas. Pre-salting and brine application is carried out in advance of frosty conditions and is dependent on:

- surface temperature
- dampness of the surface
- air temperature and humidity



Post-treatment is the application of rock salt to carriageways to melt ice and snow which has already formed. Footways can also be post-treated with brine. Where post-treatment with salt or brine and snow clearing are carried out on lower priority roads and footways, this will only take place when the main priority roads and pedestrianised areas have been cleared, which may take some time after the initial snow storm.

Snow clearing is the removal of significant accumulations of snow from carriageways and footways by the use of snow ploughs, snow blowers, other heavy machines and manual labour.

The aim during and after major snowstorms is to maintain and/or restore road communications for industrial traffic and journeys to work by public transport. This is achieved by implementing a predetermined snow plan which allocates equipment and resources in teams to the different parts of towns.

Roads serving public services such as schools and health service facilities are given priority along with community facilities such as shopping precincts. Residential streets and country lanes are treated only when the essential transport network is restored. (Adapted from: <http://www.bridgend.gov.uk/web/groups/public/documents/services/002977.hcsp>, 26 March, 2011)



Read the text *Pre-Treatment, Post-Treatment and Snow Clearing* again and find the Slovenian expressions for:

- brine
- carriageway
- footway
- lower priority road
- maintain
- pedestrian area
- saline solution
- snow plough



Match the pictures with the descriptions on the next page.



Winter Service Maintenance Vehicles

- a A *de-icer* sprays heated de-icing fluid, often propylene glycol or ethylene glycol, onto icy surfaces such as the bodies of aircraft and road surfaces.
- b A *front-end loader* is used to remove snow especially from sidewalks, parking lots, and other areas too small for using snowplows and other heavy equipment.
- c A *gritter*, also known as a sander, salt spreader or salt truck, is used to spread grit, a mixture of sand and rock salt, onto roads.
- d A *snow blower*, also known as snow cutter, consists of a rapidly spinning blade which cuts through the snow, forcing it out of a funnel attached to the top of the blower.

- e A *Snow groomer* is a machine designed to smooth and compact the snow. It is used at ski resorts to maintain smooth, safe trails for various wintersports.
- f A *snow plough* is used to clear roads which are blocked by deep snow. In most cases, the ploughs are mounted on hydraulically-actuated arms, allowing them to be raised, lowered, and angled to better move snow.

(Adapted from: http://en.wikipedia.org/wiki/Winter_service_vehicle, 26 March, 2011)

9.5 SUMMARIZING AUTHENTIC TEXTS

A summary is a short statement that gives only the main points of something, not the details. When you decide to write a summary you should think about the main ideas, key vocabulary and sentences. It is useful to read the text, underline the important parts of information and key vocabulary.

Individual work

- Read the text quickly. Decide what it is about.
- Read the text again – paragraph by paragraph. Highlight key vocabulary: single terms or short phrases that best define main points of the topic.
- Look at the key vocabulary and write a short sentence – summarize each paragraph.

Group work

- Compare and discuss your work in the group.
- Put together the whole summarised text.
- Choose a spokesperson for your group.
- Present your summary to other students.

Here are some questions to help you:

- Where do you think the article was published? In a magazine, a book, an encyclopaedia, a brochure, ...
- What is the article about?
- Which are the most important points?
- Which are the subpoints?



Read the text *Why Can't Our Transport System Cope With a Bit of Snow?* and write a summary of about 100 words.

Why Can't Our Transport System Cope With a Bit of Snow?

Much of Britain ground to a standstill today as the big freeze hit roads, railways and airports, prompting criticism from the Government about how the country coped with severe winter weather.

Motorists found themselves trapped in their cars on treacherous motorways as their path was blocked by crashed and abandoned vehicles across the South East and East Anglia. Public transport was also struck by the severe weather conditions, with rail services delayed and airports forced to cancel flights.



As many travellers struggled to continue journeys, the UK Transport Secretary demanded to know how the road and rail network had become paralysed due to the weather. The Highways Agency, local authorities, the rail industry and London Underground will have to explain why they had not been prepared for freezing weather since »Snowfall in January is hardly unexpected.«

Airports were forced to cancel services, with other flights perating with delays of up to two hours. Stansted Airport in Essex was closed due to staff not being able to reach the airport by road or rail. Airport operator BAA said Heathrow was experiencing *considerable disruption* because of the weather, with 140 flights cancelled so far and more expected. British Ariways cancelled 44 short haul flights, including all of its domestic flights, and 19 longhaul flights out of Heathrow, with a further seven flights out of Gatwick also halted.

A spokeswoman said: »Extreme weather conditions in the South of England today, including heavy snow, high winds and freezing temperatures, have resulted in significant disruption to our operations, particularly at London Heathrow and Gatwick.«

Many train services also fell victim to the weather, either through equipment failing in the sub-zero temperatures or staff battling to get to work. The Association of Train Operating Companies said services were gradually returning to normal today, but *pockets of disruption* remained. »There were some problems last night, particularly where there was very heavy snowfall. Services through Cambridgeshire were particularly badly affected, as well as East Anglia and services up to Milton Keynes.«

»Today it has been getting much better, with relatively few problems and what delays there are caused by a number of things, including signalling failure not related to the weather.« The spokesman said that compared to seVICES such as airports and the roads, the railways had stood up well to the cold weather.

WAGN, which runs services through East Anglia which has been very badly affected by the weather, said services into London Liverpool Street had been running with delays of up to an hour. WAGN's services into King's Cross also had delays up to one hour 40 minutes and a spokeswoman said many trains were subject to short notice cancellations. She added that many of the early delays were due to drivers not being able to get into work due to blocked roads.

The Prime Minister's official spokesman said that *exceptional* weather conditions had presented a major challenge to the Highways Agency, London Underground and the train operating companies. »There have obviously been exceptional weather conditions in certain parts of the country and the responsible authorities are dealing with the situation as best they can,« he said. (Adapted from: <http://www.independent.co.uk/news/uk/home-news/government-asks-why-cant-our-transport-system-cope-with-a-bit-of-snow-746836.html>, 26 March, 2011)

Summary

Urban, city, and town planning integrates land use planning and transport planning to improve the environments of communities. The practice of town planning is much older than the modern profession. Humans have built towns and cities for thousands of years. A settlement hierarchy is a way of arranging settlements into a hierarchy based upon their population or some other criteria.

Traffic congestion is one of the main problems of modern cities. Various solutions to these problems have been tried (ring roads, park and ride schemes, one way streets, ...). A complete solution to traffic congestion would be people using public transport more often.

A park is a place where people go to observe the passing scene, meet friends, and interact with a wide range of people different from themselves.

In winter it is important that the road maintenance service clears the roads and pavements in time to prevent accidents.

In this unit we discussed town planning, urban problems, green spaces in a city, winter road maintenance and how to summarize authentic texts.

Revision



Think of the traffic problems of big cities. What are they? How can they be solved? Find information in newspapers, magazines or the internet and then write a summary in about 150 words.



What is winter safety like on Slovenian roads? What is done by the maintenance organisations? What do the drivers have to do? What does the law say about winter safety on our roads? Find information in newspapers, magazines or on the internet and then write a summary in about 150 words.

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Projekt **Impletum**

Uvajanje novih izobraževalnih programov na področju višjega strokovnega izobraževanja v obdobju 2008–11

Konzorcijski partnerji:



Operacijo delno financira Evropska unija iz Evropskega socialnega sklada ter Ministrstvo RS za šolstvo in šport. Operacija se izvaja v okviru Operativnega programa razvoja človeških virov za obdobje 2007–2013, razvojne prioritete Razvoj človeških virov in vseživljenjskega učenja ter prednostne usmeritve Izboljšanje kakovosti in učinkovitosti sistemov izobraževanja in usposabljanja.