Preparing a presentation.

a) **Quickly skim the texts below and choose one of them. Read it in more detail and prepare an outline for the text.**
b) **Use your outline to prepare for a presentation of the information contained in the short texts.**

Text 1

The world currently consumes energy equal to 3 CMO (cubic miles of oil) each year. It uses 1.0 CMO from oil, 0.8 CMO from coal, 0.6 CMO from natural gas, and approximately 0.2 CMO each from hydro-electric power, nuclear, and wood. Although its population is only 1/20th of the world population, the United States uses about one-fifth of the world's energy. There will soon be substantial increases in global energy demand: more than three billion people are poised to sharply increase their standard of living, and in India and China there are already large groups of people whose wealth equals that of the average citizen of richer countries such as Sweden and Switzerland. Business as usual for the world – which includes a steady improvement in energy efficiency – would place the annual global demand for energy in 2050 at around 9 CMO. Even if we were to follow a more modest growth scenario, the annual global energy demand could still increase to 6 CMO by then. We therefore predict a need for additional energy sources capable of delivering a minimum of an additional 3 CMO annually. Fifty years from now, the 1 CMO a year we now obtain from oil will also have to be replaced, adding another CMO to the demand for alternative sources. And if we wish to reduce the role of coal and natural gas, then the alternative sources will need to provide a total of between 4 and 5 CMO by 2050.

Text 2

The problem of adequately supplying the world with clean, renewable energy is among the most urgent today. It is crucial to evaluate alternatives to conventional techniques. One possibility is energy harvesting from ocean waves, which has been proposed as a means of offsetting a large portion of the world's electrical energy demands. However, the practical implementation of wave energy harvesting has met with obstacles, and the development of new methods is necessary. Oceanic waves have large amplitude fluctuations that cause devices to fail due to excessive wear or during storms. A strategy to overcome these catastrophic events could be to base the harvesting mechanisms on soft materials. Soft, stretchable rubber capacitors are possible candidates for energy harvesting that have already been tested in a realistic ocean setting. They were originally introduced as actuators, capable of high actuation strains of more than 100% and stresses of more than 1 MPa. With a soft capacitor, mechanical energy can be used to pump charges from a low electrical potential U to a higher one, such that the electrical energy difference can be harvested. This is made possible by the large changes of capacitance under mechanical deformation. Although the method is simple and proven, it is still not clear to what extent the approach is practically useful, which is the concern of this paper. Of the many electro-active polymers, it appears that soft capacitors could have the highest energy densities.

Adapted from: Ahnert, K., Abel, M., Kollosche, M., Jørgen Jørgensen, P., and Kofod, C. "Soft Capacitors for Wave Energy Harvesting." J*ournal of Materials Chemistry,* 21, 13392-14497. 2011.
Crane, H. D., Kinderman, E. M., & Malhotra, *A Cubic Mile of Oil*. New York: Oxford UP. R. (2010). *264-5.*
Swales and Feak. *Academic Writing for Graduate Students*. 3rd ed. Michigan. 2013

Text 3

Ghana is located on West Africa's Gulf of Guinea just north of the Equator. (Unlike many poor West African countries, this country of 24 million has a growing economy that is expanding over 10% annually.) This growth has largely been attributed to the 2007 discovery of a major oil field off the coast and to Ghana's position as a leading gold producer. Ghana has also emerged as an important center for e-waste recycling and disposal, an industry that contributes more than US$200 million into the economy. E-waste consists of electronic devices typically from Europe and North America that have been discarded, but still have some value. E-waste has been said to provide opportunities for employment, poverty alleviation, recycling business developments, and may even bridge the digital divide by contributing to the country's growing demand for information technology. However, this industry also poses environmental and health risks that cannot be ignored.

The largest e-waste recycling and disposal center is located in the capital city of Accra and is adjacent to the Agbogbloshie Food Market. At this site recyclers disassemble electronics to retrieve valuable metals (for example, gold) or burn items covered with plastic (for example, computer wires) to recover metals such as copper and aluminum. These processes expose workers and others living near the e-waste site to toxic materials including plastics, lead, aluminum, and silica that are known to cause cancers and central nervous system damage among other health problems.

One way to address e-waste dangers is to install modern, sustainable recycling technology that can drastically reduce exposures to toxins. One drawback to this approach, however, centers around who should be responsible for the cost of installing such systems. Perhaps a more viable solution is for the manufacturers of electronics to reduce the amount of toxic materials used to make their products. Thus, rather than placing all of the responsibility for safe handling of e-waste on the recyclers, the manufacturers could be persuaded to examine their own practices todetermine ways to lower the risks associated with e-waste.

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